The Second Thailand - Malaysia Joint Educational Research Conference 2009

"Research-Driven Education Reform: Innovation for Quality Improvement"

November 15-18, 2009
Bangkok, THAILAND

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A Warm Welcome to
Malaysian and Thai Delegates

To

The Second Thailand - Malaysia Joint Educational Research Conference 2009

Conference Theme

"Research-Driven Education Reform: Innovation for Quality Improvement"

Date

November 15-18, 2009

Venue

Pullman Bangkok King Power Hotel
Bangkok, Thailand

Office of the Education Council
Ministry of Education, Thailand

CONTENTS

CONTENTS

CONTENTS

CONTENTS

CONTENTS

MESSAGE

H.E. Mr. Jurin Laksanawisit
Minister of Education, Thailand

It gives me great pleasure to extend my warm congratulations to the Office of the Education Council of the Ministry of Education, Thailand, on successfully organizing the Second Thailand - Malaysia Joint Educational Research Conference 2009, under the theme "Research-Driven Education Reform: Innovation for Quality Improvement." This conference is an opportunity for Malaysian and Thai researchers to highlight some of the tangible outcomes of research undertaken on a range of topics and to reflect on our shared commitment towards ensuring equitable access to a quality education for all our citizens.

Research has a key role to play in the decision-making process. I am certain that the insights contributed by the participating researchers during this conference will help us achieve our shared goals of educational development and human capacity-building for our mutual benefit between Malaysia and Thailand and the region as whole.

On behalf of the Ministry of Education, Thailand, I wish to express my appreciation to the Ministry of Education, and the Educational Planning and Research Division, Malaysia, for their generous contributions and supports to make the conference a great success. I sincerely hope that the conference will be a major step in our integration endeavors in raising educational standard in our region.

Jurin Laksanawisit
Minister of Education, Thailand

MESSAGE

Permanent Secretary
Office of the Permanent Secretary
Ministry of Education, Thailand

Thailand believes that the goal of education is to promote people's potentials in the widest sense. Education should promote equality and inclusiveness, eliminate knowledge-divide and digital-divide, and must aim to achieve peace, mutual respect, acceptance and respect of natural environment and cultural heritage.

The Ministries of Education of Malaysia and Thailand have long enjoyed educational cooperation at both bilateral and multilateral levels. The success of our on-going collaboration reflects the very close friendship that has developed between our two countries and respect shown by both parties since we started our initiatives under the Memorandum of Understanding signed two years ago in Kuala Lumpur.

Of mutual benefit and interest is the second conference under the theme, "Research-Driven Education Reform: Innovation for Quality Improvement" which will take place during 15-18 November 2009 in Bangkok. This event has been jointly organized by the Office of Education Council, Thailand and the Educational Planning and Research Division, Malaysia, targets both Malaysian and Thai educators and teachers. It aims to provide greater impetus to the improvement of our learning systems based upon educational researches.

I am confident that the achievement of the conference will result in the better quality of education through more efficient teaching methodology of teachers and more promising educational policy and planning of relevant educators of both countries.

Chinnapat Bhumirat, Ph.D.

MESSAGE

Secretary-General
Office of the Basic Education Commission
Ministry of Education, Thailand

It is such a great pleasure and honour that Thailand hosts the Second Thailand-Malaysia Joint Educational Research Conference in this year. The conference provides a great opportunity to draw upon experts, scholars, policy makers, administrators, teachers from all fields of education to share valuable knowledge and experiences on educational innovations and to strengthen networks between Thailand and Malaysia.

Malaysia and the Royal Thai Government have long established close cooperation and relationship. Since the 5 southernmost provinces of Thailand have been designated as a special development area, the Government of Malaysia has kindly extended generous supports to help the Thai Ministry of Education improve educational provisions with the aims to create better understanding and enhance the rich cultural heritage of the area. After the 21 August 2007 when the Memorandum of Understanding (MOU) was signed by the Education Minister of Thailand and Malaysia, many significant cooperation projects have taken place to serve as models and inspiration to subsequent development activities. Among these are ICT training for Islamic Teachers, Scholarship Awards for Thai students, Twining School Programme, and the 5th Southern Border Scouts Jamboree 2009.

In all activities, Tan Sri Alimuddin Mohd Dom and all the staff members have planned, executed, and followed up with far sighted visions, efficiency, and utmost concern for the benefits of all those involved. As a result, we have been able to introduce innovations into our schools, and become inspired by the commitments of our Malaysian counterpart.

The crowning event of our cooperation is indeed the visit of HRH Princess Maha Chakri Sirindhorn to Langkawi Islands and the signing of MOU between 7 schools in Satun Province, Thailand and 2 schools in Langkawi, Malaysia.

With the royal visit of Her Highness Tunku Besar Dato'Seri Tunku Puteri Intan Safinaz binti Tuanku Alhaj Abdul Halim Mu'adzam Shah to our schools in Thailand, we are confident that the seed of partnership which has been planted in the 5 Southernmost provinces will flourish into a beautiful tree of better education standards as well as better understanding and unity, which will bear the fruits of good, competent, active, and responsible citizens.

It is our earnest hope that today's conference will help chart a new course for closer partnership and relationship between Thailand and Malaysia at all levels: from educators, practitioners, schools, teachers, and students. The conference will give us an up-to-date and excellent direction to pursue education reform especially in terms of innovation and quality improvement. May today's conference be successful and yield tangible and fruitful results of quality education and the creation of peace.

(Khunying Kasama Varavarn)
Secretary-General

MESSAGE

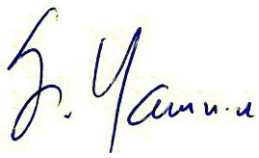
Secretary-General
Office of the Higher Education Commission
Ministry of Education, Thailand

It is my great pleasure to welcome you all to the Second Thailand-Malaysia Joint Educational Research Conference 2009 on Research-Driven Education Reform: Innovation for Quality Improvement. I am delighted to witness another remarkable step towards closer and more constructive education deliberations between our two countries.

In-depth knowledge and innovation are keys to enhance strengths and competitiveness of our human resource. The Office of the Higher Education Commission, therefore, is much supportive of a forum like this where competent scholars gather to learn from and share with one another the best of their findings. The findings and new knowledge generated from the research work presented, I believe, would make a worthwhile contribution to the quality of education and enable our students to have competitive potential in the global market.

Let us all make the best use of this conference to ignite new ideas and initiatives that may lead to joint deliberation towards better quality of education and productive world citizens.

I wish the conference every success.



Sumate Yamnoon, Ph.D.

Secretary-General

MESSAGE

Secretary-General
Office of the Vocational Education Commission
Ministry of Education, Thailand

On behalf of the Office of the Vocational Education Commission (OVEC), Ministry of Education, Thailand, I would like to take this opportunity to welcome all the delegates to the Second Thailand-Malaysia Joint Educational Research Conference 2009 to be held during 15 - 18 November 2009 by the Office of the Education Council, Thailand, in cooperation with the Educational Planning and Research Division (EPRD), Malaysia.

We know that the Southeast Asia countries have set the year 2015 for their achievement and implementation as being the ASEAN Community to promote Unity and Mutual Understanding among the member countries. Education is the most important tool for us to accomplish this. To promote cooperation in Education including its quality improvement is, by all means, to strengthen the ASEAN Community to move forwards in the Globalization Era. The conference "Research-Driven Education Reform: Innovation for Quality Improvement" marks as an effective efforts for having research methodologies to approach Education Reform and Innovation and Quality Improvement. This conference would provide the participants from both Thailand and Malaysia an opportunity to learn and exchange knowledge and experiences to improve education in their countries.

I am confident that the conference would be of great benefits and bring the unity and development in education to both Malaysia and Thailand, therefore, progress in education of the region would be made in due course. To this end, I wish the conference being fruitful and successful and the participants would gain knowledge and experiences which would be utilized in the future.

(Mr. Chaleyo Yoosimarak)
Secretary-General

MESSAGE

Secretary-General
Office of the Education Council
Ministry of Education, Thailand

The Office of the Education Council takes a great pleasure in organizing the Second Thailand-Malaysia Joint Educational Research Conference 2009, under the theme "Research-Driven Education Reform: Innovation for Quality Improvement." This important event reflects the successful picture of the First Malaysia-Thailand Joint Educational Research Conference 2008 held in Selangor, Malaysia. In addition, it is believed that this conference will strengthen consecutively the educational cooperation between our two countries.

In the conference, the academic contents between Thailand and Malaysia will be assuredly offered in form of keynote addresses, four plenary sessions, 10 concurrent sessions, poster presentations and a special interest group session presented by educational experts, educators and teachers from our both sides. Eight policy research papers and 20 classroom ones deliver ideas and knowledge regarding the overall image of educational quality amelioration as well as a variety of pedagogic innovations contributing to teaching and learning improvement.

Since the year 2009 is the first decade of the education reform in Thailand which has been initiated under the Education National Act in 1999, the Ministry of Education of Thailand will commence carrying out the education reform in the second decade of which the learners' quality improvement is the priority. It is expected that the conference will play a supportive role for the education reform in Thailand and will encourage Thai teachers to undertake classroom researches for developing the students' achievements.

In addition, the conference will be a great opportunity for Thai and Malaysian participants, both policy-makers and practitioners, to gain mutual benefit through discussion and exchange of knowledge for solving teaching and learning problems and enhancing educational quality of the two countries. I am also certain that this conference will strengthen a strong tie of friendship and unceasingly develop educational network between Thailand and Malaysia.

Last but not least, I wish to convey my appreciation to the Educational Planning and Research Division, Malaysia for continuing the academic cooperation with the Office of the Education Council. Furthermore, I would like to take this opportunity to express my sincere thanks to four main organizations under the Ministry of Education of Thailand, namely Office of the Permanent Secretary, Office of the Basic Education Commission, Office the Higher Education Commission, and Office of the Vocational Education Commission for strong academic support and cooperation which will make the conference a great success.

Associate Professor Tongthong Chandransu
Secretary-General

A Path to Practical Knowledge-Based Economy and Society in Thailand in Related to Education Reform

Associate Professor Dr. Kitti Limskul
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Abstract

The path towards a Knowledge-based Economy and Society, KBE/S in Thailand has been proposed as policy initiative since the last government in 2005. It is aimed to make knowledge 'creation, diffusion, utilization, and value creation' or knowledge management process to be driving force of Thai economy and society to new epoch of development. The cabinet and government were not able to materialize this knowledge management reform. Knowledge infrastructure especially legal foundation of intellectual right, research funding and ownership, knowledge market place, ICT infrastructure, human resource preparation, innovation system etc. were not coherently developed or reformed as has been submitted to the cabinet in the first place. The current government has adopted a second phase of Education Reform (B.E. 2552-2561) which has solidly stated the development of Thai people in the next decades through education quality and learning process, increase a core competency and skill of human resources as one of its pillars. In this paper, we make simple survey of the knowledge management policy of selected countries including Thailand. We later conclude from our survey that the four pillars of knowledge economy and society is fundamental of a path towards KBE/S. These are education and training as source of human capital creation should be in line with globalization and structural change in Thailand; the innovation system and embedded learning process need to be developed with an open system and proper legal system and government intervention so that firms-people start to venture into innovation investment; an initiation of knowledge network between producing units within and between agglomeration and clusters, communities, and people is necessary for KBE/S through the 'Ubiquitous Network Society); Legal reform for the implementation of KBE/S management.

We would like to recommend setting up pillars of KBE/S mentioned above to be managed under network of government agency. The integration of knowledge management can be under public organization which is lean and well balance between private and social benefit.

1. Significance and Objective of the Study

The second educational reform (2009-2018) in Thailand has concentrated in various aspects. One of them is a vision to let the Thai enters process of lifelong learning with quality. The learning process can be formal or informal shared by every section of society. The reform set target to achieve three targets by 2018. First, government would like to develop education service quality and standard as well as Thai learning ability. Second, it would increase the opportunity to learn for all Thais. Third, the issue of education administration and management by all party of concerns is raised. The outcome of this reform is simply to let the Thais to be able of self-learning; communication skills and

creative thinking with analytical skills; having public mind, self-discipline, group oriented tasking; democratic and anti corruption with ethical and moral sentiment.

The reform proposed to shift education finance from supply side to demand side. In other words, the students have to bear certain burden according to the rate of return to education. It also proposed to push forward for the build up of knowledge infrastructure like the ADSL and WiMAX for materialize a networking of knowledge.

Despite the concrete direction of the reform and being adopted by the ministerial meeting, we keep on closely to watch the monitoring of the path to knowledge society and economy dreamed by the reformers.

The objective of this paper is to summarize the knowledge management path that has been set in Thailand prior to the education reform. We would like to justify that in order to achieve the target of knowledge economy and society we have to lay down knowledge infrastructure to pave way for proper knowledge management towards the target. In our study we review past record of Thailand in trying to set path for knowledge economy and society. We would like to spell out the success and failure of this policy in Thailand. Second, we would like to survey the management pillars that have been set forth by other countries that we select as cases. Lastly, we would like to conclude our finding and policy recommendation.

2. Economics of Knowledge

Economic of knowledge is described by Foray (2004) to be differed from research since economic of knowledge is neither to produce technical knowledge nor innovation. It is not related directly with economics of information. Knowledge content is in itself an output of process not data and information. The economic of knowledge in narrow definition is composed of activities on research, education, with impact on economic growth and through learning and competences. In broad definition, knowledge encompassed learning process rather than just 'reproduction' or 'copy' of knowledge. The learning process takes time and based on firm relation between 'master' and 'apprentice'. Even though, the codification of knowledge is successful up to certain extent. The process of learning have 'human being or person' to mobilize and preparation of cognitive resources.

Economists used the word 'endogenous growth model' to signify the internal change of substance and form of economic development. They concentrate to prove that research and development will have increasing return to scale on production and growth. It is an economic of externalities in knowledge market.

Only small portion of knowledge is 'codified'. Most of knowledge is 'tacit' in nature and 'excludible'. That is why the Intellectual Property Right (IPR) is designed as government intervention to lessen the externalities of the knowledge market. This knowledge infrastructure of legal system is not well defined in Thailand despite IPR law that we have. The ownership of research output and benefit sharing is not cleared in terms of government funded research and development.

Knowledge creation in nature is defined as new knowledge stemming from innovation of human rather than by nature. Knowledge is however a joint product in its nature and must

be related to other state of situation or activities. A restructure of organization towards learning organization may incur efficiency decline in the short run. Knowledge has the following economic substances: It is partially non-excludable and non-rival. That is to say it is public goods in nature and making knowledge exclusive on some one or community by controlling it privately is difficult and costly. It is non-rival in the sense that others can utilize the knowledge with decreasing marginal cost. Knowledge is commutative and differentiated between being consumption capital and intellectual input for further new knowledge creation. Knowledge is not tragic of the knowledge commons. Thus, society needs to manage knowledge differently from depleted natural resources.

In the education reform, knowledge is not clearly defined. In economics perspective, reform target of lifelong learning with quality may not be achievable as follows: 1) as knowledge has special characteristics of being partially localized in nature, e.g., learning of one technology will not have direct effect on other nature of technology. The application of tacit knowledge may not have any effect on society as a whole if without proper standardization so that technology can be wide application for all. Most of knowledge is weakly persistent in nature. 2) New knowledge is fundamentally tacit in nature and 'sticky', thus the education reform needs to design education system to integrate tacit knowledge. Thus, knowledge can be widely diffused. 3) Kahin (2006) indicates that knowledge is diverse and complex and being context dependent. It is however widely accepted that new knowledge is managed in related to innovation system, wealth creation, and economic growth.

In our view, the education system reform that allows networking between researchers in university to be partnership with industrial research need, incubation process is not insignificant in knowledge management and growth contribution. More importantly, the intake into education system at the primary, lower and higher secondary level are prerequisite in supplying human resource quality for further knowledge management as well. The endogenous process of never ending knowledge creation, diffusion, utilization and wealth creation is fundamentally determined by the enforced scarcity property of knowledge.

3. Approach to form a Knowledge Economy and Society

Globalization has forced Thai government to response to the impact and finding ways and means to ride on it. Essentially, Thailand realized that globalization has brought both threats and opportunities. Wave of new technology is observed to be more and more important for Thailand to climb up the global value chain in economic development. Globalization has brought about as well threat in national security, fast capital flow, terrorism, and ICT and technology crime. It is accentuated by global warming impact which has brought constraint and opportunity to economy development. Thais seemed to agree on the ground that knowledge economy and society rested on the knowledge of molecular such as biotechnology, material technology, and nanotechnology respectively. Information and Communication technology is seconded in their mind. The Thais also tried to look for alternative energy especially the renewable energy source other than fossil fuels. The localization of culture and human consumption pattern is considered to be main thrust of protection from globalization. Several measures have been applied to prevent emergence of new decease and reemergence of subsided epidemics. Laws have been passed to prevent and cyber crime and terrorism as well.

Yet, Thailand has not achieved in pushing for the rebuilding of a knowledge infrastructure. Thailand has not heavily invested in ICT and broad brand for ubiquitous connection. Computer usage ratio is still very low as compared with her epoch of economic development measured by per capita income. Certainly, knowledge has not been networking in its creation. It is neither a public goods for those poor income group to access. The legal system on IPR is mainly ineffective to push for the creation of new knowledge but rather import and use of knowledge for industry and business. The net import of knowledge is still high between Thailand and the rest of the world. Clearly, the legal landscape of ownership of knowledge has not been in place. Unlike the USA and Japan where the legal structure had been laid from the beginning of knowledge creation took place. Sharing of benefit and cost is legally cleared. As a result, there is no knowledge market place explicitly existing in Thailand. In economic theory, pricing rule has not been efficiently determined for new knowledge creation, no incentive to innovate. Diffusion of knowledge has no intervention from the public policy so that knowledge is still sticky and not diffused. Accessibility to knowledge is very costly as information of knowledge market is highly inefficient and asymmetric. Externality was widely prevails. In simple words, public research using tax payer money mostly was left on the shelves rather than diffuse to the needs of industries and society. Private investment in research and innovation is very scant and disincentive. Market of knowledge in Thailand has not been established.

The education reform did not have direct responsibility as it could not find clear signal from knowledge market either private or public ones. The reform however has tried to get in touch solidly with the needs. It did seek to get close to the signal of quality and qualification of demand for knowledge human resource preparation for science and technology, culture, medicine, engineers and other professionals. However, even though most of stake holders could tell the direction of needs but not the qualifications and detail strategic plan and solution. There is a very thin relationship between education system who supplied human resource to the labor market and those who representing demand from industries, business and households or from opinion leader in our society.

The four forms of KBE/S proposed by the world bank are namely 1) KBE/s is activity to raise human capital formation of core competency and skills; 2) It fundamentally comprises the role of science, technology and innovation; 3) The infrastructure of knowledge management is ICT as its main impetus; 4) KBE/S is sensitive to legal infrastructure that is precondition before taking off. Berryman (2006) proposed the integration of four forms of KBE/S proposed by the World Bank to incorporate knowledge level from private economy to society and nature and environment. We would like to propose the intervention of tax and subsidy as well as grant and transfer as mechanism in the open space to clear knowledge market in the case private demand and supply of knowledge. In the case of open space of demand and supply of knowledge by society, nature and environment, knowledge is not transacted through market like the private sector but it is still equilibrated through certain mechanism as follows:

Source of Knowledge	Knowledge based economy	Knowledge based society	Knowledge based nature
Education (human capital accumulation)	To raise core competency and skills to laborers	To develop human society as a whole	To sustain nature and environment for human existence
Innovation (infrastructure of knowledge development)	Systematize process and technique to create new knowledge	To institutionalize for new deals and agreement for peace justice and human right	To search for environmental friendly technology e.g., alternative energy for fossil fuel
Network (knowledge sharing among stake holders, cost and benefit of knowledge creation)	Financing of knowledge creation, diffusion, utilization and value creation with respected to knowledge infrastructure	Social network, trust in society, culture based loyalty and honest with integrity	Agreement on environment protection for sustainable human existence
Knowledge Management Output			
Creation	Innovation related to Industries and business entity, import-export of knowledge, knowhow of process technology	Knowledge of community such as local wisdom is revitalized, tacit knowledge is codified for sake of society progress	Knowledge of private and public sector needs to gear for sustainable growth with environment and natural resource balance over time
Diffusion	Knowledge is sticky and tacit, thus to diffuse knowledge public intervention has to lessen down the externalities	Public has to use tax and subsidy to intervene in the public space of knowledge so that demand and supply is met	Heavy government intervention is necessary through green house gas emission reduction, abatement by tax and subsidy scheme
Utilization	Private sector has to pay for accessibility to utilize knowledge, knowhow, technology at subsidized market price with IPR	Utilization of knowledge is totally subsidized. Knowledge is public goods if it has widely impact on society	Heavy government intervention on the protection of environment and degradable natural resources. Grant and transfer scheme, tax and subsidy scheme are key instruments
Wealth creation	Private creation of wealth from knowledge is recognized with proper IPR		

Source of Knowledge	Knowledge based economy	Knowledge based society	Knowledge based nature
Knowledge Open Space			
Supply of Knowledge Output	Supply is from university, public and private research institute, individual researchers, and independent inventor. Cost of knowledge creation is very costly for certain product e.g., medical research, thus knowledge needs proper encryption and codified IPR recognition	Tacit knowledge is foretold by generation to generation, it is however sticky in nature and without neither encryption nor IPR recognition. Production of public knowledge is not interested by private sector.	Undiscovered knowledge is enormous in nature and environment, codification of taxonomy and interaction of knowledge is very fragmented. Supply of knowledge and technology in this category is being researched intensively.
Demand for Knowledge Output	Demand of knowledge, knowhow, technology and invention at reasonable price is inaccessible at current market price if without subsidy and government intervention	Social demand for knowledge is mostly unmatched by supply as knowledge is not free public goods. Necessary intervention of government is necessary to make certain knowledge that is necessary for society to be non-rival non-exclusive public goods	Demand for knowledge to sustain development with natural resource and environmental protection is determined by level of degradation of natural resource and environment. Government intervention is need through Polluter Pay Principle and Benefit Principle
Market Pricing and Equilibrium			
	Market pricing under tax and subsidy scheme is fundamental to market equilibrium. Government intervention is needed through transfer and grant as knowledge market is imperfect and demand did not meet with supply owing to asymmetric information	Knowledge in the open space is accessible by society. Knowledge which is not public goods in nature needs government intervention of grant and subsidy. Pricing of knowledge for social demand is determined within public space.	Knowledge in the open space on Green House Gas emission reduction technology is not for free. Government intervention is needed to make grant and transfer to reach knowledge and technology created by private sector to use in this widely

Source of Knowledge	Knowledge based economy	Knowledge based society	Knowledge based nature
			affected non-market sector by externalities. The abatement technology for environment is heavily intervened by government. The dynamic equilibrium is determined by shadow pricing

Note: adjusted from Berryman (2006)

Berryman (2000) proposed strategy of learning how to learn by using methodological skills. This includes ability to learn by oneself throughout life time. Most of education institute did not equip with this skills. It is practicing business as usual in teaching. Students learn how to pass and certified accomplishment. This new methodological skills change role of teacher to be only facilitator to help student learn to accumulate their knowledge and skills. Teacher is skillful in bringing knowledge to students. Students will choose and prioritize problem issues and solving question. Students will try to understand content of knowledge by themselves.

4. Case Studies

Many governments in East Asia have launched a KBE/S and ICT plan. These are as follows: People Republic of China State Information Development Strategy (2006-2020); India Vision 2020 (2002); e-Japan Strategy (2001); e-Korea Vision 2006 (2006); Malaysia's KBE Master Plan (2002); Philippines National Information Technology Action Agenda for the 21st Century or IT21; Singapore 21 (1997) and ICT 21 Master Plan (2000); Thailand's IT 2010 (2001) respectively.

China PRC

Education and skill training	National Innovation	Network and ICT	Legal environment, regulation and rules
-Work plan for compulsory education, intensive training for employee, -education and learning reform in university,	-Introduce a NI reform, High-tech industrial Park are booming, -knowledge innovation by setting up many research institutes	-Concentration of ICT and digital devices use in western coastal area, -ICT utilization in health service, and media business, e-commerce, -the 12 Golden Projects, - e-government	-The 10th five-year plan with respect to education, skill training, and ICT -reform the research and development program

Education and skill training	National Innovation	Network and ICT	Legal environment, regulation and rules
-relaxing constraint on employment			

India

Education and skill training	National Innovation	Network and ICT	Legal environment, regulation and rules
-India had increased ICT skilled persons at critical mass level -Internationalize education standard -ICT innovation by private sector to raise education service efficiency -Educational Quality improvement to match with market demand -Reverse brain drain strategy	-Internationalize of production process with high technology by multinational company -promote university-industry link for modern research outcome -promote the large company to support university research and development activities -set up National Innovation Foundation to help support the science and technology research activities	- initiation of ICT industry indigenously for China -creation and sharing of knowledge cross cutting, and rural area to lessen digital divide -promote the e-government for citizen services	-Introduce the 8Cs concept for ICT ubiquitous environment -set up broad brand policy to hook up with broad band network throughout China -set up Knowledge Commission of China

Korea

Education and skill training	National Innovation	Network and ICT	Legal environment, regulation and rules
-Government put utmost effort in education investment -set up EDUNET project to e-learning through ICT system for student, teacher and general citizen -set up ICT for 10	-set up Center for NI Management -Promote an outsource of research and development to private sector to serve government need -promote an adoption	-liberalize large ICT companies to Korea -support research and development of strategic technology -set up Small Enterprise	-include the ICT development plan in the e-Korea Vision 2006 to -legalize the Knowledge based management activities

Education and skill training	National Innovation	Network and ICT	Legal environment, regulation and rules
million Korean who are farmer, fisherman, housewife, and those students who could not access to the knowledge in the class room	of high technology in industrial production -R&D service for SMEs -government prepare marketing and commercial policy to serve for high technology application in production	Networking Project for SMEs to be able to hook up to internet service -private participate in lessen the digital divide in remote area -e-government in 5 main areas	

Malaysia

Education and skill training	National Innovation	Network and ICT	Legal environment, regulation and rules
-promote a lifelong learning -science knowledge is first priority in education and training - Reverse brain drain of scientist	-Reverse brain drain especially those skill and professional in innovation -set up Multimedia Super Corridor (MSC) as path to innovation, research and development of multimedia product	-promote the ICT accessibility to internet especially by community and children -Business to business internet and ICT connection -Flagship application project of multimedia both the creation and utilization by business -e-government of Malaysia	-Magazine on KBE for 2020 to disseminate national agenda on KBE -set up 7 strategies in National KBE plan -Convention on the National IT Agenda towards KBE by 2020

Singapore

Education and skill training	National Innovation	Network and ICT	Legal environment, regulation and rules
-School broad brand project under the cooperation of ICT industry and school system -Critical Infocomm Technology Resource Program to raise skill and professional in ICT	-Private initiation of Research and Development for innovation -increase capability of technology by modernization -increase number of application of high technology	-Public services through e-Government Action Plan and e-Citizen portal -Technology cooperation between national and international companies	-initiation of ICT21 Master Plan to push 3 strategies -being leader in the Asian regional cooperation -Free Trade agreement with main partners

Thailand

Education and skill training	National Innovation	Network and ICT	Legal environment, regulation and rules
-Education and creation of knowledge -Vocational education and training	-set up IT Park	-Accessibility to ICT -e-Government and online service in line with the '4Rs' -ICT utilization by SMEs	-National IT 2020 Plan

Note: 4Rs –red tape reduction, rapid response, rural coverage, 24hrs service; 8 Cs – connectivity, content, community, commerce, capacity, culture, capital and cooperation; SMEs-small and medium enterprise; NIS-national Innovation system.

5. Conclusion

In our study we have shown that knowledge is tacit and sticky in its nature. The market of knowledge is affected by externalities. Those who want to buy knowledge could not meet with those who have knowledge to sell. Price cannot clear the market of knowledge if without government intervention through grant, transfer, tax and subsidy if not direct regulation.

Most of countries in East Asia are planning a path to Knowledge based Society and Economy with concentration in four pillars namely education and training; National innovation; Networking of knowledge and ICT development; and legal environment,

regulation and rules. Most of countries in the region have been successful significantly after implementation of master plan.

Thailand has not been able to launch its national plan as government has changed frequently. As a result, a path to KBE/S of Thailand was still unclear and without integration and coherent activities among ministries of concern. In our view, initiation and creation of open space for private, public sector demand and supply of knowledge market to activate the standardization of codification of knowledge, human resource development, pricing rules, tax and subsidy as well as grant and government transfer to knowledge utilization by the society. Knowledge for sustainable development through balance environment and natural resource supply and use need to be paid by Polluter pay principle and Benefit Principle after heavily intervention by government.

In relation to education reform, we have not observed a closed networking strategy between education institute as source of knowledge creation and any organization who would act as diffusion media and accessibility of private and society in general to utilization of knowledge for wealth creation. The open space of demand and supply of knowledge is somewhat not existent in Thailand. Knowledge market does not exist and very volatile, tacit, exclusive and costly for general public. We may have to create a well defined function of knowledge open space and market in Thailand. A proper pricing rule may help bridge the gap between demand and supply of knowledge though with government intervention, through grant, transfer, tax as well as subsidy to reach further efficiency.

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Assessing the Needs of Competencies for Training and Development: Case of Two States in Malaysia

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Abstract

Since its inception in 1979, Institute Aminuddin Baki (IAB) had undergone several important structural changes which shaped IAB now. Rapid changes in educational world and newly acquired knowledge in the field of educational leadership and management create demand for IAB to reflect on its role and objectives, delivery system as well as its training programs. Through a mandate given by the Minister of Education in April 2008, the Ministry of Education Malaysia has repositioned IAB as a premier centre for educational leadership and management training at the local and international level with credentialing authority to award or certify professional trainer. In realising the effort, IAB had develop a competency based need assessment or KOMPAS© to determine the competencies needed by school leaders for training and development purposes. To date 3,530 school leaders had completed KOMPAS© which is accessible online. Two State Education Departments were fully involved with IAB's initiative in their effort to improve professional development for their school leaders. This paper will discuss the analysis and findings of KOMPAS© for both states and its implication to IAB training programs.

1.0 INTRODUCTION

Training and development of school leaders and its relationship towards school effectiveness had always catches the eyes of researchers and policy makers and had created a polemic in finding suitable training program for educational leaders (Anderson, 1991; Hanapiah, 1980; Hussein, 2007; Ibrahim, 2007; Leithwood, 1995; and Olson, 2007). Research showed that leadership training has no direct relationship with school effectiveness since what was learned in university or training institutes would not be able to cater to the real need in school leadership and management (Amin & Abdul Razak, 2008; Leithwood, Begley and Cousins, 1994; Hughes, Ginnett & Curphy, 1993). However, there were researches that support the ideas that leadership training able to enhance and develop the knowledge, skill and attitude of school leaders as well as future leaders (Bush, 1998; Nur Anuar & Faridah, 2006; Ruhaya, Rosnarizah & Shariffah, 2006).

As the National Institute for Educational Leadership and Management, Institute Aminuddin Baki (IAB) was commissioned to create and develop remarkable school leaders through training and development. In line with this mandate, IAB was in constant effort to enhance and improve its training program. Focus was given toward continuous professional development for school leaders. Thirty years since its inception in 1979, the institute had undergone several important structural changes which shape IAB now. The rapid development in the educational world had caused changes in educational policy, social trend, politic, technology and economy. There are also newly acquired knowledge in the field of educational leadership and management based on researches around the world.

Hence, it is needful for IAB to reflect on its role and objectives, delivery system as well as it its training programmes.

Managing Educational Leadership Talent Framework

In 2008, IAB introduced the Managing Educational Leadership Talent (MELT) which focused on the elements of continuous training and development. MELT consists of five important elements that interconnected and related to one another: Growth Oriented Training and Development (Khair, 2007), High Impact Training and Development Initiatives (HITI), Leadership Competency Assessment (LCA), School Leadership Competency (SLC) and its output which is the High Impact School Leadership. The relationship of the five elements in MELT is shown in Figure 1.

Growth Oriented Training and Development (GOTD) is the core of MELT and serves as input for HITI as well as LCA. HITI and LCA are two approaches employed by IAB to carry out GOTD hence translate the output of MELT into High Impact School Leaders (HISL). However, the hub of every processes involve in MELT is the School Leadership Competency (SLC). It is therefore, imperative for IAB to develop the SLC in order to materialize this framework.

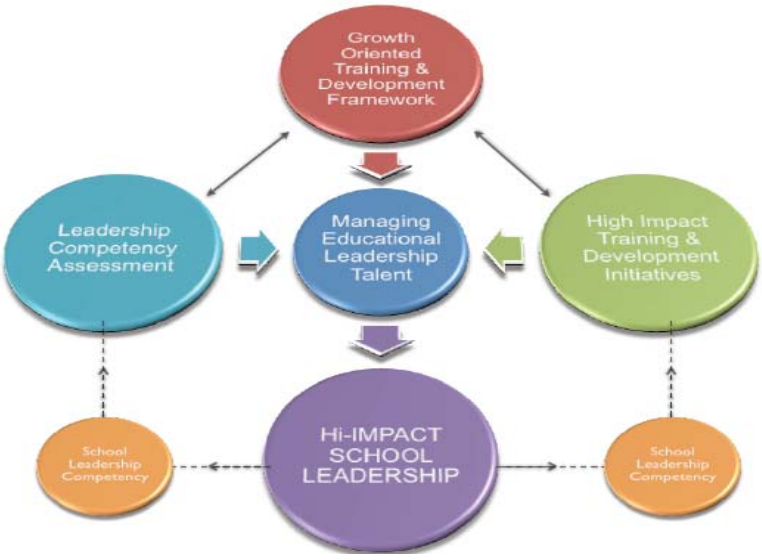

Figure 1 Managing Educational Leadership Talent Framework

School Leadership Competency

The School Leadership Competency was derived from an elaborate study on the trend of educational leaderships' traits. MacBeath (2004) had identified 25 leadership traits relevant to the management and leadership practices in schools. A thorough review of literature showed that the leadership traits were known by its adjective expressions such as instructional, participative, democratic, strategic and transformational. These labels compliment the differences in leadership traits and methodology in achieving two main objectives in effective organization which is organization goal setting and influencing members towards the achieving the organizational goal (Leithwood *et* al, 2004).

This extensive review of literature produced the High Impact School Leadership Model which encompasses six leadership traits: personal leadership, managerial leadership, instructional leadership, transformational leadership, distributed leadership and value-based leadership as shown in Figure 2.

Figure 2 High Impact School Leadership Model

The competencies of each leadership traits were scrutinize and analyze into a generic competency suitable to the educational leadership and management in Malaysia. The analysis yields 26 competencies and is grouped into six domains and they are Policy and Direction, Instructional and Achievement, Managing Change and Innovation, People and Relationship, Resources and Operation and Personal Effectiveness (Figure 3).

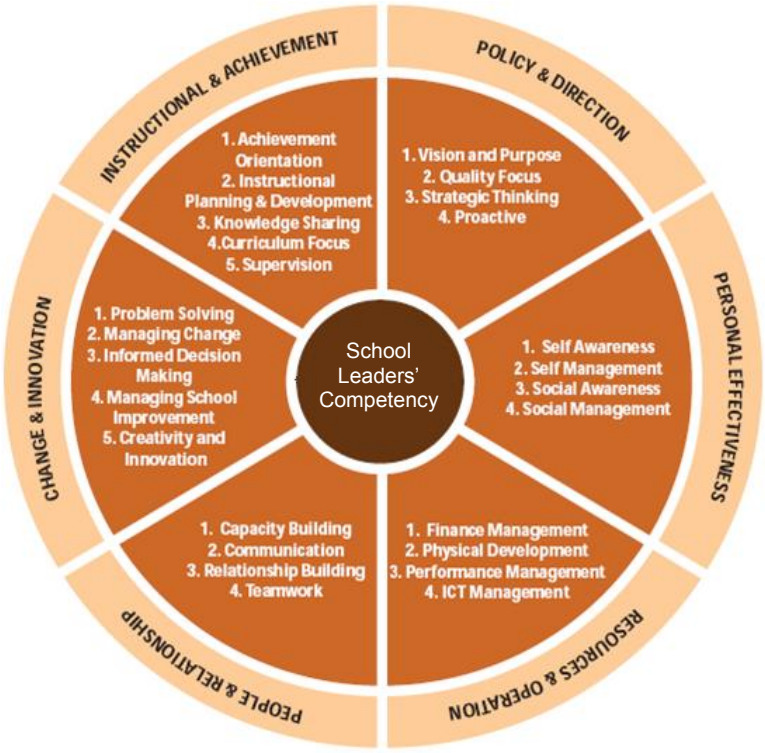

Figure 3 The Competencies of Malaysian School Leaders Model

2.0 ASSESSING THE NEEDS OF COMPETENCIES FOR TRAINING AND DEVELOPMENT

The landscape for needs assessment has change greatly since 1999 (Gupta, 2007). The changes involved the organizational decision which may have local or global impact, larger role of technology such as online surveys and email and the increase of ethical guidelines by professional association. For the last 10 years IAB had focused on job and task analysis for assessing the needs for training and development for schools leaders. IAB is proud with the establishment of the Competencies of Malaysian School Leaders (Figure 3), which has become the foundation for the development of KOMPAS©. KOMPAS was developed internally by a group of IAB professionals based on the High Impact School Leaders Competency research in 2008. Its main purpose is to determine the competencies needed by school leaders for training and development purposes. KOMPAS© could be access online through IAB's official website, which is http://www.iab.edu.my/kompas.

3.0 COMPETENCY NEEDS INDEX FOR SCHOOL LEADERS

The Competency Needs Index for School Leader is derived from the data obtained from KOMPAS© Online. The Index is the average of all the 26 competencies in the Competencies of Malaysian School Leaders Model (Figure 3). The minimum value is 1.0 (Not needed) and 5.00 (Highly needed). The national Competency Needs Index for 2008 was 3.5 which shows that the Malaysian school leaders basically in needs of training and development. Institute Aminuddin Baki will produce yearly, the national index as well as state indexes.

To date 3,530 school leaders had access and completed the assessment of KOMPAS© On line. The Sabah and Johor State Education Departments were fully involved with IAB's initiative in their efforts to improve the professional development of school leaders in their state respectively. This report will focus on the analyses of KOMPAS© of both states. Purpose of the analysis is to:

i. determine the competency needs index of Johor and Sabah;
ii. determine the competencies needs index for school principals and headmaster for both states;
iii. compare the competencies needs for training and development based on school leadership competencies; and
iv. implications of the findings to Institute Aminuddin Baki and school leaders

4.0 FINDINGS

4.1 Competency Needs Index of Johor and Sabah

Figure 4 shows the Competency Needs Index for the primary school headmaster for Johor and Sabah. The index for the state of Johor is 2.98 which are equal to the National Index. The Competency Needs Index for Sabah is much higher which is at 3.93. Similarly, for the secondary school principal, the competency index for Johor is lower than the national average. But for the state of Sabah the value of the index is higher as compared to Johor.

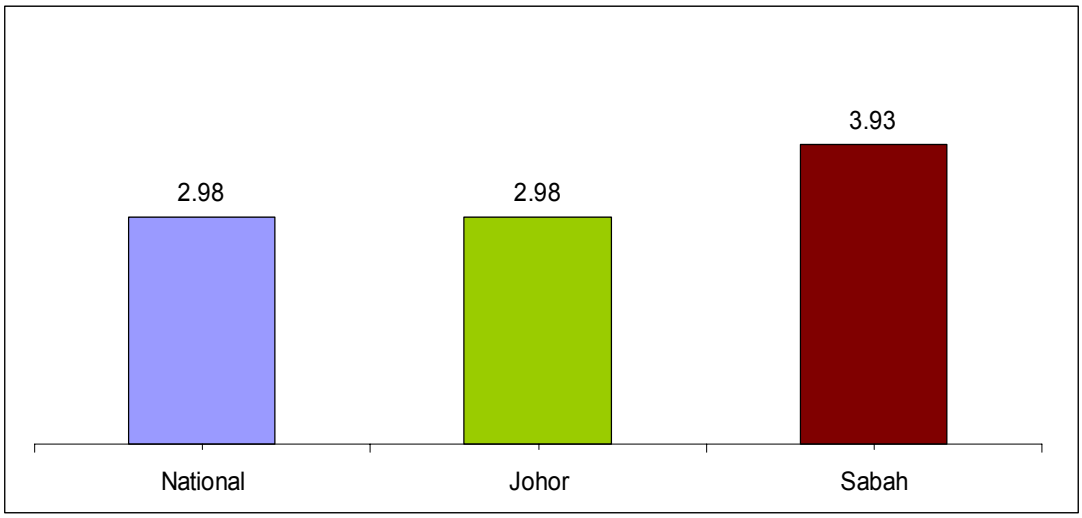

Figure 4 Competency Needs Index for School Headmaster

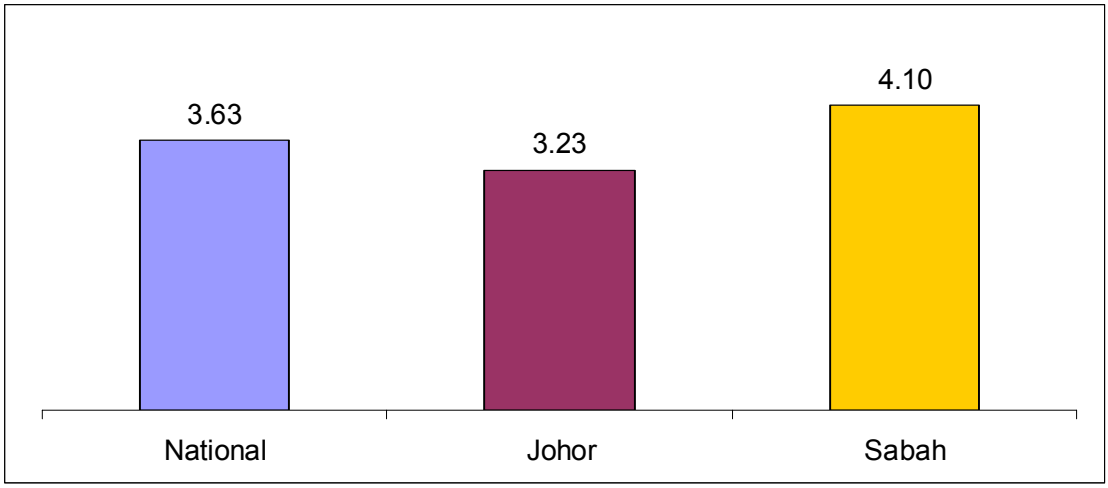

Figure 5 Competency Needs Index for School Principal

4.2 Comparison based on Domain of Competencies

Figure 6 and Figure 7 show the radar graphs for the six domain of competency for headmaster and principal respectively.

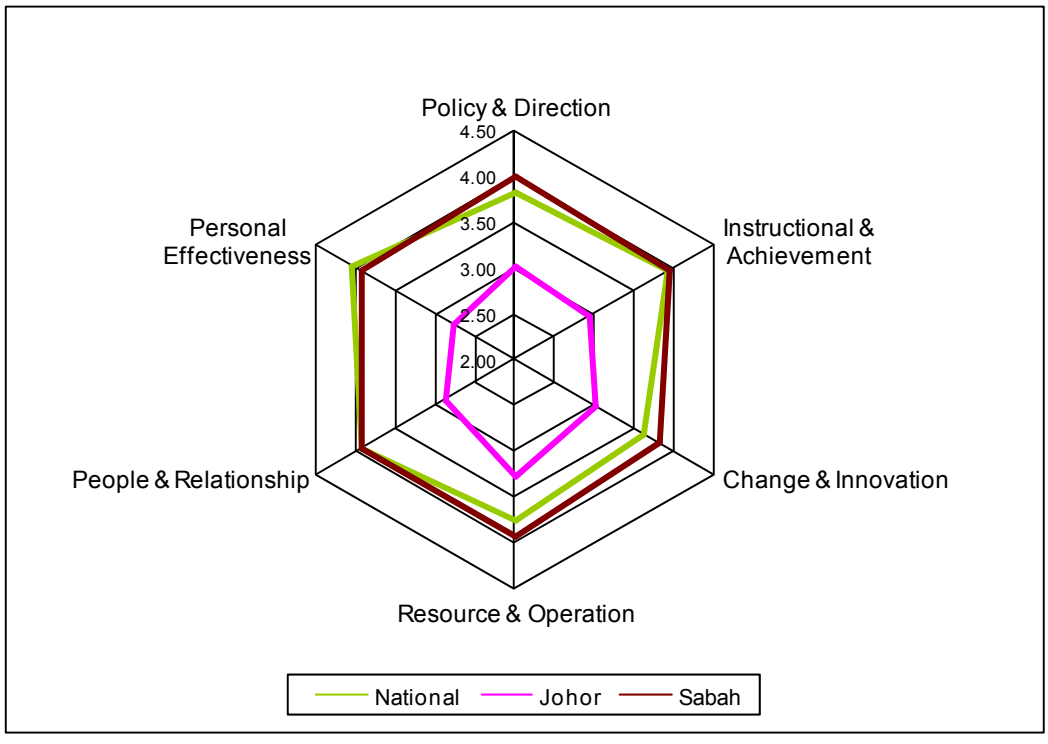

Figure 6 Comparison of Competency Domain for Headmaster

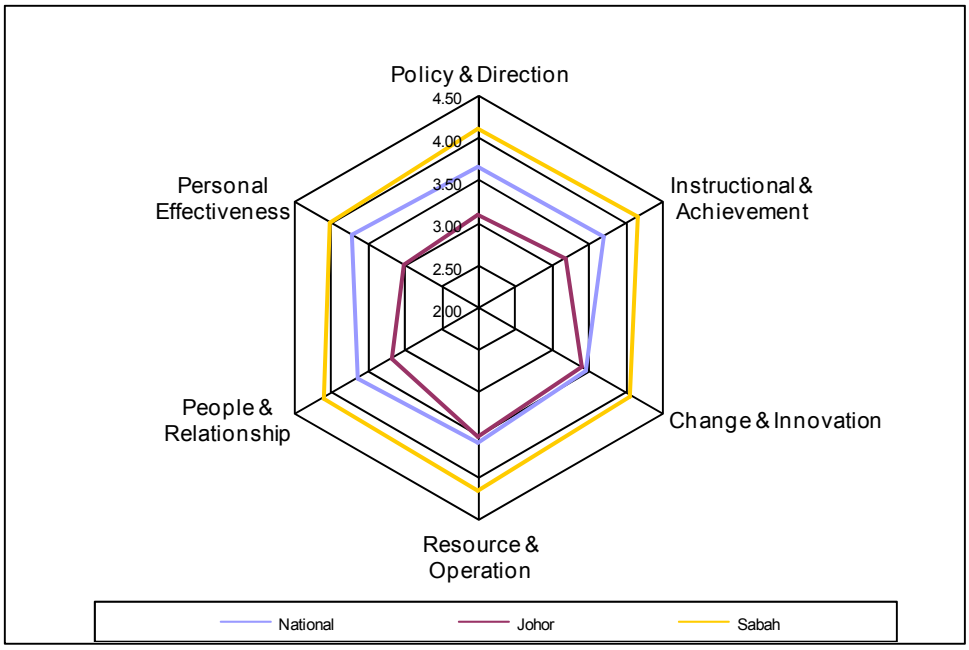

Figure 7 Comparison of Competency Domain for Principal

The analysis shows a considerable gap between competency needs for headmaster of Sabah as compared to the current national index. The gap can be observed particularly in the Change and Innovation and Resources and Operation. Smaller gaps also existed in the Policy and Direction and Personal Effectiveness domain. The analysis also reveals the competency needs for headmaster of Johor is below the national index.

Similar pattern can be observed for the school principals. However, the gap is much larger and can be observed in all domains but with greatest gap is in the Change and Innovation and Resources and Operation domains.

4.3 Comparison based on Competencies

In order to know the exact competency needs of the school leaders, an in depth analysis KOMPAS was conducted focusing all 26 competency in the Competencies of Malaysian School Leaders Model. Figure 8 and 9 shows competency needs for school principals and the headmasters of Johor and Sabah.

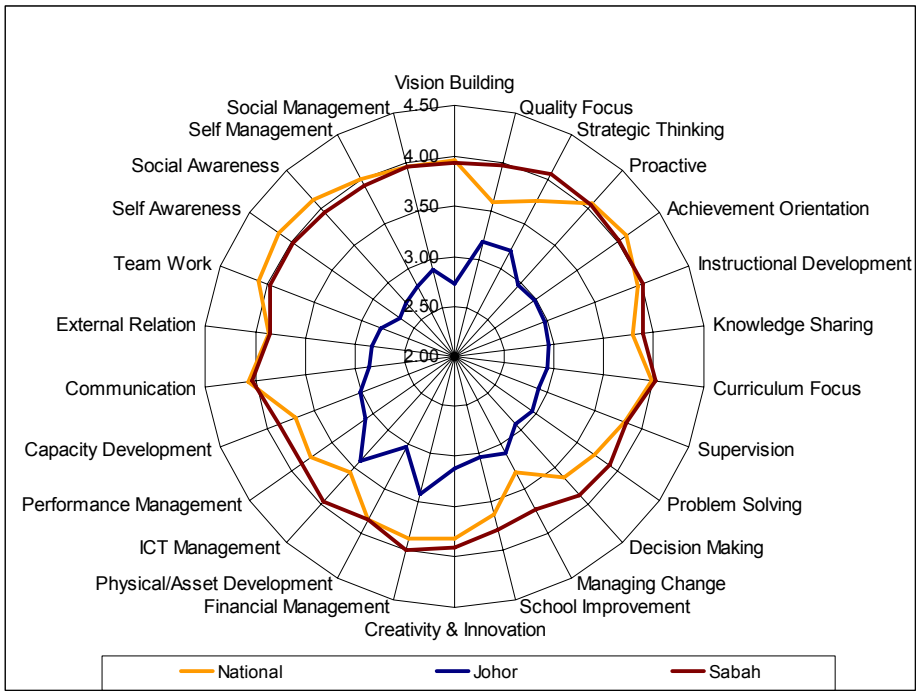

Figure 8 Comparison of Individual Competencies for Headmaster

The greatest competency needs for headmasters of Sabah is Quality Focus, Managing Change and ICT Management. There are also needs in Strategic Thinking, Decision Making, Problem Solving, School Improvement and Capacity Building. As for the state of Johor, it seems that the needs are low in all competencies (Figure 8).

Similar pattern can be observed for the school principals, but the gaps are larger in all competencies. In this case the largest gaps are in Quality Focus, Managing Change, ICT Management and Performance Management. The other competencies needed are Instructional Development, Curriculum Focus, Supervision, Problem Solving, and Decision Making (Figure 9).

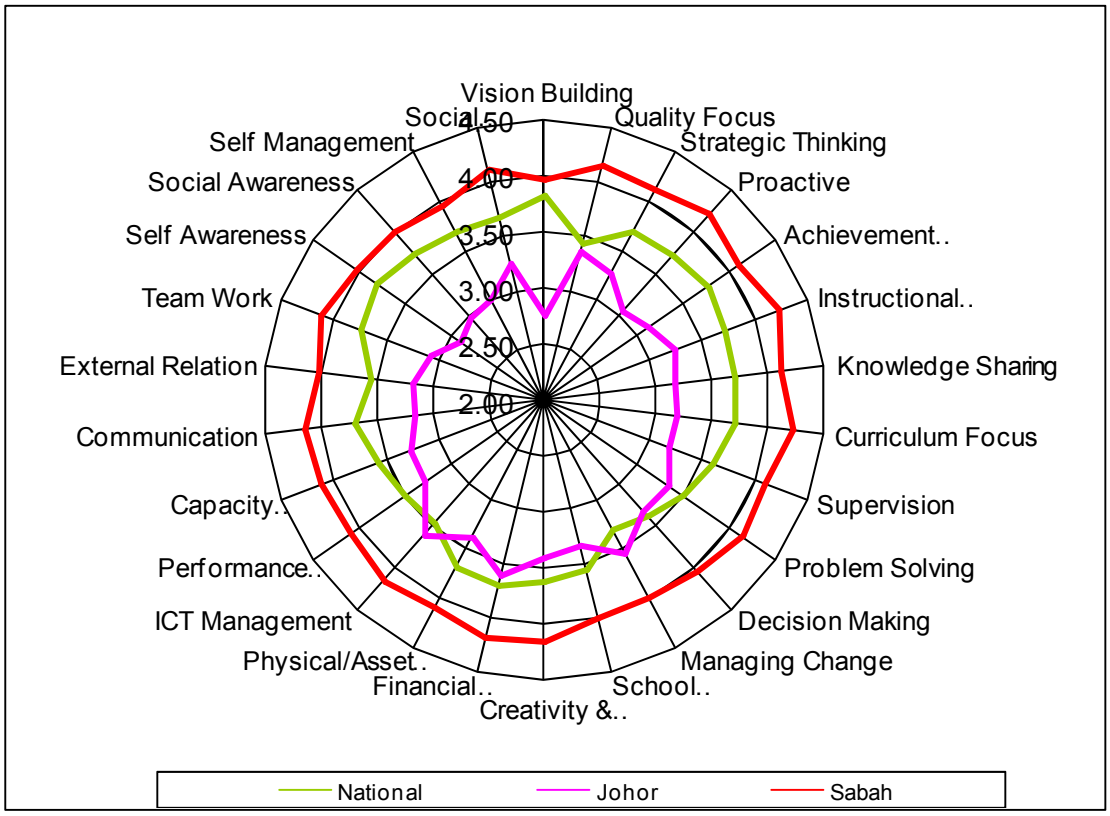

Figure 9 Comparison of Individual Competencies for Principal

5.0 DISCUSSION

KOMPAS Online enables IAB to conduct three level analyses in assessing the competency needs for training and development of school leaders in Malaysia. At the first level, it gives the overall competency needs for training and development in each state by producing a Competency Needs Index for each state. Our case analysis shows that the state of Sabah shows greater competency needs for training and development compared to the state of Johor. The second level of analysis produces competency needs based on the domain of competency. In our case analysis, the domain which of greater needs are Resource and Operation, Managing Change and Innovation (for headmasters in Johor) and for the school principals, the competency domain are Resource and Operation, Managing Change and Innovation, Instructional and Achievement and People and Relationship. For the state of Johor, the needs are much lower than the national average.

The third level analysis, will give the detail needs of every competency. Figure 10 shows the competencies needed by school leaders in Sabah. KOMPAS Online enables IAB to plan and to give higher priority to Sabah in those twelve competencies. As for Johor, since the index for the state is lower that the national average, the focus of IAB is to help the state to mobilize school leaders to engage in continuous professional development (CPD) and to create professional learning community to enhance their knowledge and skills. IAB will publish a Manual for School Leaders as a guide/workbook.

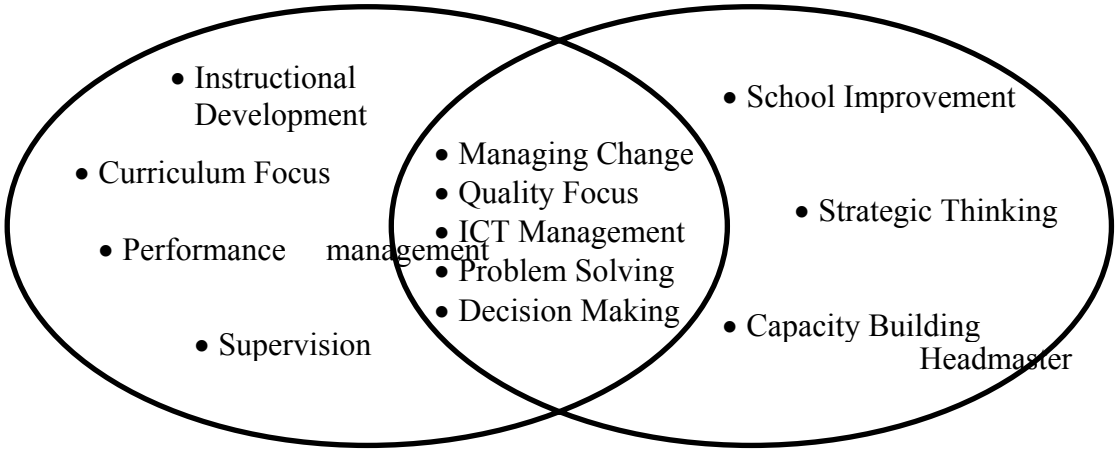

Figure 10 Critical Competencies for Sabah School Leaders

6.0 IMPLICATIONS

From the above discussion, KOMPAS Online will enable IAB to plan and focus its efforts based on the real needs of school leaders in Malaysia. The results of three level analyses of KOMPAS will pinpoint the most critical competencies required by them. It is the responsibility of IAB to design the right training program to fulfill their needs and to make sure the resources provided by our government is channeled to the right programme

Another advantage of KOMPAS Online is the ability for school leaders to check their training and development needs on a regular basis. The result can be used for personal professional development and as a guide in choosing the right training programme offered by IAB through SPK Online. In future, IAB plan to integrate KOMPAS and SPK Online so the system will automatically suggest the right training and development programme required by any school leaders when they use the system.

At the district or state level, the collective results can be used as a planning guide for their training and development programme. By having this kind of knowledge, the training and development programme can be tailored to fulfill the needs of the school leaders in Malaysia.

7.0 CONCLUSION

In conclusion, the creation of KOMPAS Online and SPK Online has changed the management of training and development scenario for Malaysian school leaders. The training and development index derived from KOMPAS enables IAB to assess the effectiveness of its training programme. At the same time, it also informs every school leader of their training needs so that they can plan their own continuous professional development proactively and hence creating the professional learning community amongst them.

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The Results of Lab Schools Project
Office of the Basic Education Commission (OBEC)
Ministry of Education

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Abstract

Prompted by a belief that education reform is a tool to provide equal opportunity for Thai children with quality schools serving them at locations close to their home, a project was incepted to help mobilize human resources with respect to intelligence, experiences a wealth into a special type of schools. These are schools that make the dreams of grass-root rural dwellers or low-income people come true in the sense that they make it possible for their children to benefit from equal opportunity in such a way that when these children grow up they become well educated citizens and enjoy quality of life as well as have good jobs with high pays. This is an assurance that children of these people will no longer suffer from the vicious cycle that prevails in poverty stricken rural areas.

With this vision in mind, the Lab School Project was launched in the fiscal year 2004 which, to date, has completed its second phase with a total number of 1,788 schools across the country in full operation.

The evaluation study of the Lab School Project firstly aims to analyze research studies of the schools under the projects and secondly to compare findings of prior studies related to indicators of project success. The nature of this study is a descriptive one that relies mainly on documentary research and draws on 25 studies altogether conducted on project school during 2004-2008. The research instruments include a research findings analysis form and a data collection form for field administration. The sample consists of 921 schools in the first phase purposely selected from a population of 38,547 persons.

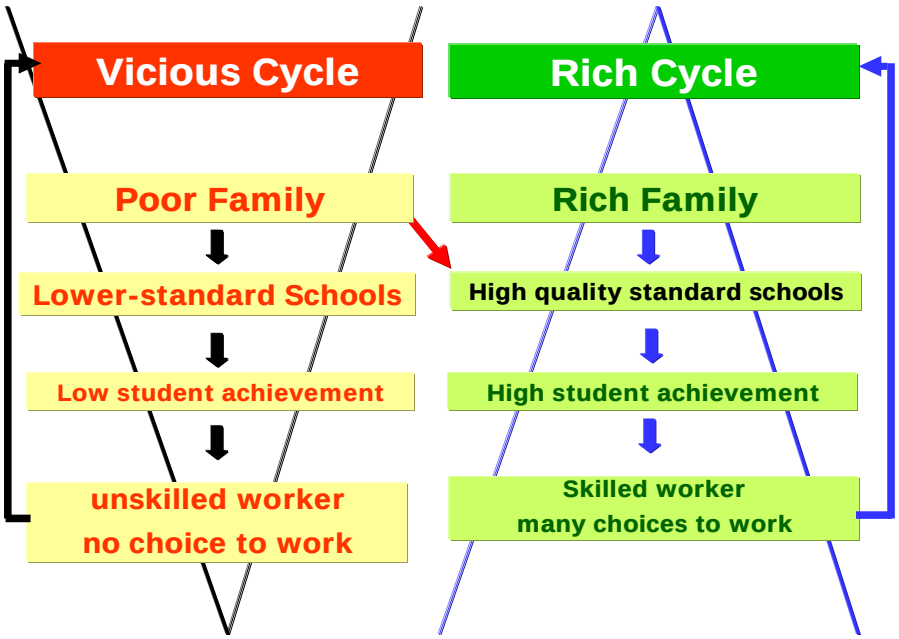
Findings show that overall achievement of the project is satisfactorily cost effective as indicated by the objectives of the strategic plan being met and the indicators for project success being attained. The Lab Schools are legitimately proto-typical for educational reform that shows concrete results. Strengths of the project schools include their antidote in stopping rural students from flocking into renowned schools in urban centers as previously occurred. The increasing trend of student enrolments in continual, especially at the lower secondary level. The rate of success of entrance into well-known universities keeps rising, especially in fields where shortage of skills occurres. Students clearly score higher in desirable characteristics. Communities, parents and local people indicate pride in their schools and are truly involved in school quality development efforts. The school climate, learning resources and environments turn out modernized, clean , safe and friendly in the context of

student learning at all levels. Most of the Lab Schools under study receives certificates of accreditation as an assurance of their educational quality.

Factors that enhance success includes the school readiness prior to joining the project. Another contributing factor is the school administrators' personal efforts and commitment, enhanced by the support and push of all policy makers as well as active assistance of community members and patronizing agencies. The schools benefit from joint collaboration, decision making and assessment by all parties concerned. Information and communication technology is introduced to the schools to facilitate teaching and learning in all curricular areas. The change and adjustment of the environment and climate has occurred in these schools and so made the improvement and modernized of teaching and learning in the various subject areas. Roving teams are utilized to assist the individual schools, to monitor and evaluate the instructional program and to ensure that the schools truly represent model institutions in the people's dream. Finally, the project strengths are indicated by staff and teacher development in the use of instructional media and technologies, the use of their areas of success as resources for educational visits and the existence and functioning of project coordination centers in providing support with good will.

Factors that tend to impede success are several. While the project goal is rather ambitious, budget support is far from being adequate; thus causing some schools to fall into debts as well as to fall short of teachers to teach computer, mathematics, science and English which appears to be on the opposite direction of the rising student enrolments over the years. Unfortunately, this necessitates the real location of a major portion of the budget initially allocated for student quality improvement to settle the debts and hire temporary teachers. As a result, student quality development rather suffers. The choosing of schools that do not quite meet the criteria of readiness precluded success in their attempts. A uniform set of criteria for selection often ignored the individual school contexts. Procurement of computer hardware and peripherals by the central department causes delays both in redistribution and maintenance. In some cases, transfer of school administrators disrupt continuity of the project activities. The exponentially rising costs of electricity for a large number of computer sets procure for the schools are not accompanied by a proportionate budget allocation for utilities as mostly the case with regular schools outside the project. The baud rates of the internet are extremely low and the power current is not stable enough to allow efficient use of the newly installed computers. Most students are falling short of higher-order thinking skills and analysis abilities, nor are they capable of selecting information. Learning resources outside the schools are still insufficient and the student English language proficiency for daily communication is unsatisfactory. Finally, the results of national standardized tests and student achievement tests of most schools are generally unsatisfactory, although some schools are highly successful in pitting their students against the national norms.

The Office of the Basic Education promptly believes that education reform is a tool to provide equal opportunity for Thai children with quality schools serving them at locations close to their home. This project was incepted to help mobilize human resources with respect to intelligence, experiences and wealth into a special type of schools. These are schools that make the dreams of grass-root rural dwellers or low-income people come true in the sense that they make it possible for their children to benefit from equal opportunity in such a way that when these child grow up they become well educated citizens and enjoy quality of life as well as have good jobs with high pays. This is an assurance that children of these people will no longer suffer from the vicious cycle that prevails in poverty stricken rural areas as below:-



In 2003, the Royal Thai Government launched the “Lab School Project” by allocating a 2,558.32 million baht budget during 2004-2006. The 921 schools were selected as pilot schools for trying various models such as management, pedagogy, learning support and community participation supporting school works. The objectives of this study were to analyse research studies of the schools under the project and to compare findings of prior studies related to indicators of project success. The nature of this study is a descriptive one that relies mainly on documentary research and draws on 25 studies altogether conducted on project schools during the period 2004-2008. The research instruments include a research findings analysis form and a data collection from for field administration. The sample consists of 921 lab schools in the first phase during 2004-2008.

Schools	No.	2007	2008	2009	2010	2011
Lab School 1	921	921	921	921	921	921
Lab School 2	867		867	867	867	867
Lab School 3	712			712	712	712
Lab School 4	500				500	500
Total	3,000	921	1,788	2,500	3,000	3,000
Budget		170	39.9	460		

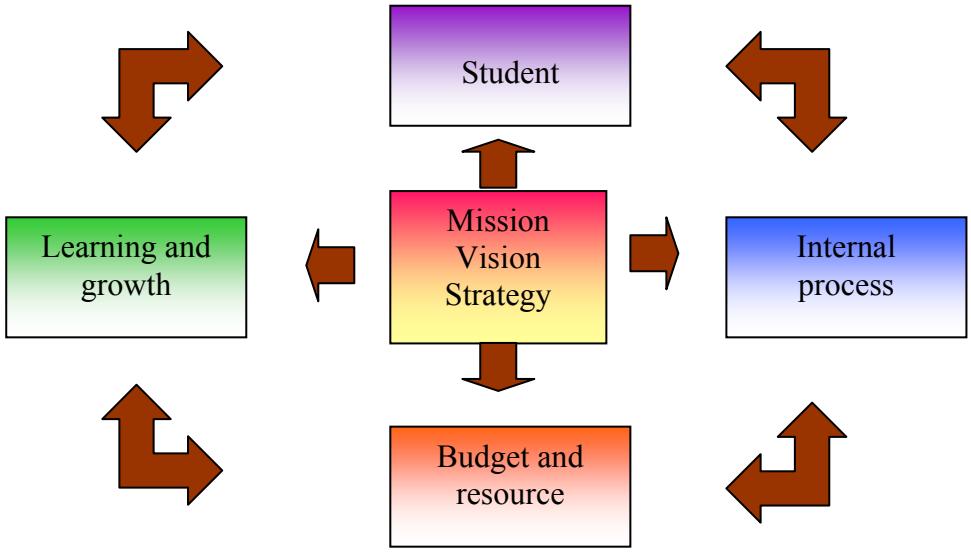
This table shows development process for the lab schools in fiscal 2007-2011

	Develop the learning resources/environment = Lab schools
	Use learning resources for student quality development = Proto-typical lab schools
	Quality schools with the learning resources service = Learning development center

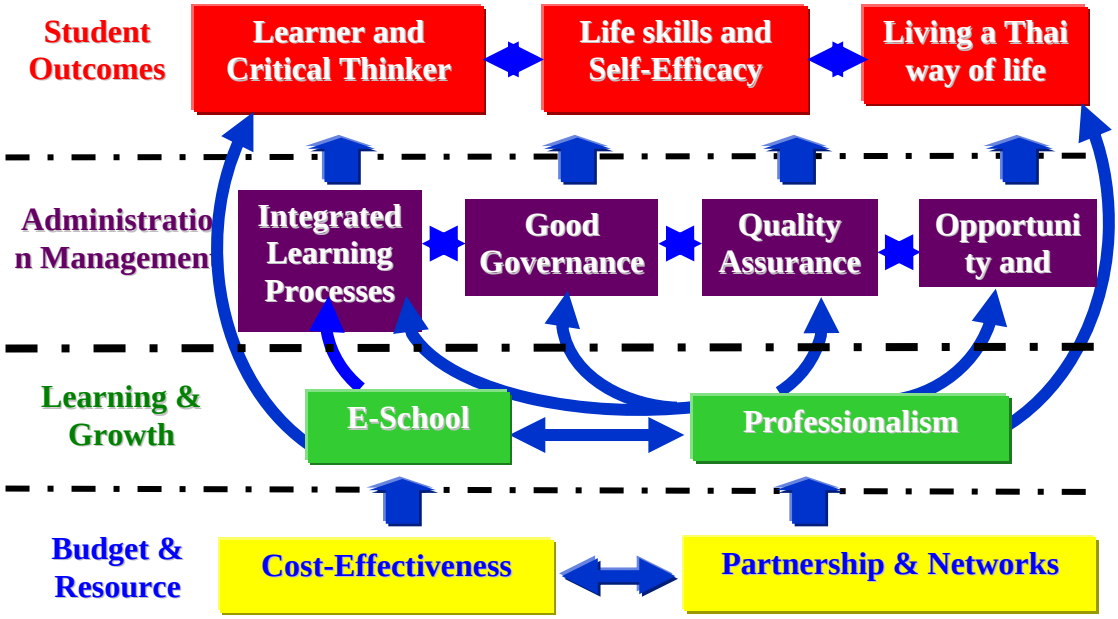
School : grade 7 – 12	= 1,500 schools	**3.000**
School : Kindergarten/grade 1-6/grade 9	= 1,500 schools	

In order to implement the strategy stipulated and to attain vision and mission the Lab Schools project, it proposed the success outcomes on the balance scorecard model in 4 perspectives as follows:-

1. Student perspective – consider people's needs and the student desirable characteristics
2. Internal process perspective – consider the success outcomes and guideline on efficiency and quality development on management and pedagogy approach
3. Learning and growth perspective – consider driven factors to students receive the desirable quality development such as strengthening school as learning organization, development on competency and skills for teachers, administrators and educational people, increasing schools capacity for using innovation, ICT.
4. Budget and resource perspective – consider factors supporting the implementation for attainment in terms of budget and resources.



The successful outcomes on the balance scorecard model sets the strategic objectives in 4 perspectives by using strategy map as follow:-



The Key Performance Indicators (KPI) was assigned for evaluating the proto-typical Lab schools in 4 main parts:-

1. KPI on Student Quality
   1.1 Student as a person of critical thinking learning
   - Read and seek for learning by themselves
     - Show outcomes of the reading abilities
     - Inform the knowledge resource they learnt
   - Enhance English Language skills and do research
     - Communicate and present in English fluently

- Use Information Technology and Communication for learning
    - Have e-mail address
    - Be able to retrieve knowledge through Internet and Intranet
    - Share learning experiences and submit the assignment through intranet and internet
- Build and present works showing critical thinking and creativity
    - Have works from ICT study
    - Have electronic works in term of creativity
    - Have graphic works, building movement pictures and design by computer program
    - Present works through electronic media fluently

1.2 Life skill and self confidence

- Be able to integrate principles, concepts, skills, moral and ethics to their daily life
- Show ability as the student committee that participate in the management
- Have activities showing the continuum management system that explains the step of management system, input, profit, solving problem, etc.
- Have special skills like music, sport, Thai dancing, etc. awarded at school, provincial, national and international level
- Have a respect
- Have a good relationship with others and self confidence

1.3 Proud to be Thai

- Students are aware of Thai tradition conservation, Thai culture and local wisdom
    - Participate the tradition and culture activities and inherit the local wisdom
    - Distribute works of tradition, culture and local wisdom
    - Have works of using Thai for communicating

2. KPI on Internal process

2.1 Good governance

- Decentralize the administration and management system
- Allow people to respond to the right job and make them encourage to work and can explain their jobs clearly
- Have excellent works in the community
- Present the strength points clearly

2.2 Enhance and assist student potentially

Giving education service to the target group

- Have individual data
- Have data of students graduated about their further study and jobs.

Looking after and support students

- Have a guidance system and consult for students in terms of the way of life and the academic
- Have the selection, assistance, protection, and development for students

- Collaborate and collect the support and assistance scholarship for students
- Have a network with community and outsiders to protect children and youths

2.3 Integrate learning approach

Develop curriculum and learning approach by focusing onthe integration between learning and the way of life

- Have activities reflecting to the Integration learning such as mini-company, school bank, school cooperative.

Have competitions on learning outcomes such as writing scripts and video recording, writing program or robot inventions, building the cartoon animation, building website, etc.

2.4 Quality Assurance

Enhance the Education standard quality until the community and the people concerned accept.

- Number of students increase
- Statistics of study further or work in the knowledge used increase.
- Have honor award outcomes of schools and persons
- Become prestigious and accepted school from others
- Great support from community

3. KPI on Learning and Development

3.1 Become professional

- Teachers, administrators, school board members have knowledge and love to Educational Quality Development
- Administrators are leaders of academic
- Administrators develop themselves for knowing every academic items
- Teachers can manage learning approach in every specific situation
- Teachers change the learning approach from teacher centered to student centered
- Teachers provide students learn through electronic media in every subject
- School board and people concerned understand the guideline of school implementation and support the school activities

3.2 E-school

Apply IT to management approach for implementing fast and fluently

- Use the computer network for administration and management by updating data and being ready to work
- Monitor and follow up students during class and after class
- Find resources and financial administration

Enhance capacity of ICT skill for developing educational quality

- Have ICT labs for learning as below:-
    - Math Laboratory
    - Science Laboratory
    - Language Laboratory

- Computer Laboratory

Link IT data with computer network

- Use computer network for library management
- Develop to e-library
- Have searching resources through computer network system

4. KPI on Budget and resource

4.1 Build network

Schools have a network system, experts, mentors, supervisors of proto-typical schools, community and local wisdom that participate to Educational Quality Development

- Have external sponsors
- Have networks on curriculum and learning approach
- Have parent association, alumni association or seeking resources through computer network system
- Coordinate, assist, share experiences with the school network and community

4.2 Be worthy

Schools have suitable and efficient resources

- Teachers graduate or have knowledge in right track
- Teachers always use computer for learning
- Teachers maintain tools/equipment that are ready to use all the time
- Library is a full time service

Findings show that overall achievement of the project is satisfactorily cost effective as indicated by the objectives of the strategic plans being met and the indicators for project success being attained. The Lab Schools are legitimately proto-typical for educational reform that shows concrete results. Strengths of the project schools include their antidote in stopping rural students from flocking into renowned schools in urban centers as previously occurred. The increasing trend of student enrolments is continual, especially at the lower secondary level. The rate of success of entrance into well-known universities keeps rising, especially in fields where shortage of skills occurs. Students clearly score higher in desirable characteristics. Communities, parents and local people indicate pride in their schools and are truly involved in school quality development efforts. The school climate, learning resources, and environment turn out modernized, clean, safe, and friendly in the context of student learning at all levels. Most of the Lab Schools under study receives certificates of accreditation as an assurance of their educational quality.

Factors that enhance success include the school readiness prior to joining the project. Another contributing factor is the school administrators' personal efforts and commitment, enhanced by the support and push of all policy makers as well as active assistance of community members and patronizing agencies. The schools benefit from joint collaboration, decision making and assessment by all parties concerned. Information and communication technology is introduced to the school to facilitate teaching and learning in all curricular areas. The change and adjustment of the environment and climate has occurred in these schools, and so made the improvement and modernization of teaching and learning in the various subject areas. Roving teams are utilized to assist the individual schools, to monitor and evaluate the instructional program and to ensure that the schools

truly represent model institutions in the people's dream. Finally, the project strengths are indicated by staff and teacher development in the use of instructional media and technologies, the use of their areas of success as resources for educational visits, and the existence and functioning of project coordination centers in providing support with good will.

Factors that tend to impede success are several. While the project goal is rather ambitious, budget support is far from being adequate; thus causing some schools to fall into debts as well as to fall short of teachers to teach computer, mathematics, science and English which appears to be on the opposite direction of the rising student enrolments over the years. Unfortunately, this necessitates the real location of a major portion of the budget initially allocated for student quality improvement to settle the debts and hire temporary teachers. As a result, student quality development rather suffers. The choosing of schools that do not quite meet the criteria of readiness precluded success in their attempts. A uniform set of criteria for selection often ignored the individual school contexts. Procurement of computer hardware and peripherals by the central department causes delays both in redistribution and maintenance. In some cases, transfers of school administrators disrupt continuity of the project activities. The exponentially raising costs of electricity from a large number of computers sent procure for the schools are not accompanied by a proportionate budget allocation for utilities as mostly the case with regular schools outside the project. The baud rates of the internet are extremely low and the power current is not stable enough to allow efficient use of the newly installed computers. Most students are not falling short of higher-order thinking skills and analysis abilities, nor are they capable of selecting information. Learning resources outside the schools are still insufficient and the student English language proficiency for daily communication is unsatisfactory. Finally, the results of national standardized tests and student achievement tests of most schools are generally unsatisfactory, although some schools are highly successful in pitting their students against the national norms.

Evaluation Study on the Implementation of The Early Literacy Through English (ELiTE) Pilot Programme

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Abstract

The study was carried out to evaluate the implementation of the Early Literacy Through English (ELiTE) pilot programme, which aimed at increasing Year One pupils' literacy in English. It was an intervention programme designed by the Ministry of Education (MoE) to get the pupils ready to learn Science and Mathematics in English. The study focused on the three aspects of the implementation process, namely the effectiveness of the ELiTE Module, the level of teacher readiness in implementing the programme and the effect of the programme on pupils' achievement in the English Language. A total of 244 teachers teaching Year One students, from 57 primary schools were selected to carry out the ELiTE programme. The number of pupils involved were 767 Year One pupils from the ELiTE Programme pilot schools and 767 Year One pupils from schools that were not invoved in the ELiTE programme. Examination papers, questionnaires and structured interview protocols were used as research instruments. The findings indicated that the content of the ELiTE Module was moderately comprehensive and that the module had achieved 15 of the 18 ELiTE objectives listed. The study also showed that, teachers' level of readiness to implement the programme was moderate. The overall effect of the ELiTE programme which was based on pupils' examination results, showed that the pupils involved in the ELiTE pilot programme scored significantly higher than pupils who were not involved with the programme. Finally, the majority of teachers agreed that the programme should be expanded to all primary schools, especially those with moderate and low academic achievement.

1.0 INTRODUCTION

The implementation of the English for the Teaching of Mathematics and Science (EteMS) policy was carried out in stages beginning in the 2003 academic year. The government had decided to change the medium of instruction from Bahasa Malaysia to English in the teaching and learning of Science and Mathematics. This change was made to enable the development of the nation's human capital in order to achieve the status of a developed country. In addition, it was seen as an early preparation to compete in the era.of globalization. It was also hoped that through EteMS, Malaysia would be able to produce scientists and mathematicians of commendable quality, who would be able to compete at the international level.

When the policy was first introduced, the teaching and learning of EteMS involved all Year One at the primary school level, and the Form One and Lower Six students at the secondary level.

Since 2003, many studies and monitoring measures have been carried out by the Ministry of Education (MoE) to ensure the success of the policy. Nevertheless, research findings have shown that a sizeable number of primary school pupils had difficulties in learning Science and Mathematics in English, hence, their inability to grasp important concepts during the teaching and learning process in the classroom. Thus, the lack of proficiency in the language has been identified as the major problem in learning the two subjects in English.

2.0 LITERATURE REVIEW

There is abundant empirical and observational evidence in the area of language acquisition, that the children who are particularly likely to have difficulty with learning to read in the primary grades are those who begin school with less prior knowledge and skill in certain domains, most notably, general verbal abilities, phonological sensitivity, familiarity with the basic purposes and mechanisms of reading.

Researchers now believe that it is better to intervene early and provide the necessary intervention to prevent students from developing a pattern of failure. Primary prevention steps designed to reduce the number of children with inadequate literacy-related knowledge (e.g., concepts of print, phonemic awareness, receptive vocabulary) at the onset of formal schooling would considerably reduce the number of children with reading difficulties and thereby, the magnitude of the problem currently facing schools.

Early intervention program will enable teachers to help educationally at risk students to improve their literacy skills in the first years of schooling. At-risk children are in critical need of effective instruction in the early years in order to develop effective reading and writing skills. Flippo (2001) suggests the following elements of effective literacy instruction:

i. A book-rich literate environment;
ii. Teacher read-alouds;
iii. Students reading aloud to others;
iv. Shared reading;
v. Phonological awareness instruction;
vi. Phonics instruction;
vii. Reading comprehension strategy instruction;
viii. Writing strategy instruction;
ix. Variety of reading and writing activities; and
x. Time for reading and writing.

Early intervention is important for students who are struggling with reading and writing. Pikulski (1994) stresses the importance of coordinating the intervention with regular classroom instruction so that they complement each other. Focusing on high-need English as a second language, developing and implementing an early intervention model is imperative and must be tailored to meet the children's needs. Research has made clear that

early bilingualism may well bring cognitive advantages, particularly in domains such as helping students understand the arbitrary nature of language systems and literacy systems.

Strategies for increasing literacy development focus not only on improving reading skills, but also on developing the higher-order thinking skills that enable students to comprehend, analyze, and communicate about ideas. Well-designed literacy programs provide students with frequent opportunities to use language--reading, writing, listening, and speaking--for varied and authentic purposes. In addition, teachers must be provided with the right support to use diagnostic assessments and to monitor student data to improve the effectiveness of their teaching.

3.0 BACKGROUND OF ELiTE PROGRAMME

One of the strategies proposed to counter the problem of low proficiency in the English language among primary school pupils was to introduce an early intervention programme called the Early Literacy Through English or ELiTE to the Year One pupils. The ELiTE programme was introduced in 2007 and involved fifty seven selected primary schools from rural areas.

The ELiTE programme is a one year intensive programme designed to assist Year One pupils from primary schools to master the basic or foundation of English encompassing four main aspects namely, (a) listening, (b) speaking, (c) reading, and (d) writing. In addition, ELiTE is designed to prepare pupils to learn Science and Mathematics in English.

The programme modules were provided in order to assist teachers in its implementation. Throughout the implementation, teachers were encouraged to modify and adapt the modules so as to adjust to their pupils' abilities.

The programme involved the incorporation of modules of English, Science and Mathematics subjects during the first term of the schooling year. It was continued in the second term but only for English Language. Science and Mathematics were taught to Year One pupils according to the respective syllabus in the second term.
The objectives developed for the programme were aimed at enabling Year One primary pupils to :

i. rewrite words in English correctly;
ii. follow verbal instructions in simple English;
iii. rewrite phrases in simple English correctly;
iv. read English words;
v. rewrite sentences in simple English correctly;
vi. understand questions in simple English;
vii. write words in simple English correctly;
viii. answer questions in simple English;
ix. read phrases in simple English;
x. follow written instructions in simple English;
xi. read sentences in simple English;
xii. write phrases in simple English correctly;
xiii. ask questions in simple English;
xiv. write sentences in simple English correctly;

xv. converse in English on simple topics;
xvi. read a paragraph containing two(2) or three(3) simple English sentences;
xvii. understand a paragraph containing two(2) or three(3) simple English sentences; and
xviii. write sentences in simple English to form a paragraph.

4.0 RESEARCH QUESTIONS

The study was conducted with the aim to answer these research questions:

i. To what extent has the content of ELiTE Module been able to achieve the objectives of the ELiTE programme?

ii. To what extent are teachers ready to implement the ELiTE programme?

iii. To what extent has the ELiTE programme helped to improve Year One pupils' competency in the English Language?

5.0 METHODOLOGY OF THE STUDY

5.1 Research Design

The purpose of this study was to evaluate the effectiveness of the ELiTE programme, involving both teachers and Year One primary pupils who participated in the pilot programme.

The survey method and the quasi experiment approach were used in this study. The quasi experiment approach was utilized to determine the effects of the programme by comparing the achievements of the experiment group, comprising Year One pupils who had undergone the ELiTE programme and the control group, made up of Year One pupils who were not a part of the programme.

Quasi-experiment is a scientific research method primarily used in the social sciences. It shares characteristics of a true experiment which seeks interventions or treatments. The key difference in this empirical approach is the lack of random assignment. In this study, the quasi experiment facilitated the assessment of the programme's objectives and the effectiveness of the overall programme.

5.2 Research Sample

The respondents in this study were made up of teachers who were involved in the ELiTE programme from all fifty seven (57) pilot schools.

For the quasi experiment approach, forty to forty five Year One pupils, from twenty five pilot schools and twenty five non-pilot schools with similar attributes were selected.

5.3 Research Instrument and Data Collection

A set of questionnaire was developed for the teachers involved in the programme. Teachers were asked to give their opinion on two constructs: (a) appropriateness of the modules, and (b) readiness in implementing the ELiTE programme.

In addition, the English Language Test Paper for Year One was used for the quasi-experiment. The test was constructed to assess pupils' competencies in four areas of basic English Language skills, namely listening, speaking, reading and writing.

The Year One pupils were required to take the test twice, once prior to the implementation of the ELiTE programme modules in January 2007 and again in November 2007, upon completion of the modules. Pupils' scores from both the pre-test and post-test were then accumulated to analyse the programme's effectiveness.

5.4 Data Analysis

The Teachers' questionnaires were collected and analyzed using SPSS. The mean scores were then calculated and interpreted as follows:

Range of Mean Score	Interpretation
1.00 – 1.49	Totally Disagree
1.50 – 2.49	Disagree
2.50 – 3.49	Agree
3.50 – 4.00	Totally Agree

The mean of the pre and post scores of pupils from both the pilot and control schools was compared in order to assess the effectiveness of the modules and the overall programme.

6.0 RESULTS AND DISCUSSION

6.1 To what extent has the content of ELiTE module been able to achieve the objectives of the ELiTE program?

The ELiTE module was developed to assist Year One pupils to master basic skills of the English language, so as to prepare them to learn Science and Mathematics in English. In this study, respondents were required to provide feedback on the: (i) effectiveness of the ELiTE module in achieving the objectives of the ELiTE program, and (ii) appropriateness of the ELiTE program in preparing Year One pupils to learn Science and Mathematics which are taught in English.

i. The effectiveness of the content of ELiTE module

Eighteen (18) objectives of the ELiTE programme designed by the Curriculum Development Centre were utilized in order to assess the effectiveness of its content.

However, as seen in Table 1 below, between 50.7 and 59.7 percent of the respondents did not agree that the ELiTE module had enabled the Year One pupils to achieve three (3) of the eighteen (18) ELiTE objectives listed. The mean scores for the three (3) objectives ranged from 2.36 to 2.48 as shown in the table.

Table 1
The Appropriateness of ELiTE Module Content in Achieving the Objectives of ELiTE Programme

The module content had enabled Year One pupils to….	**Did not agree**	**%**	**Agree**	**%**	**N**	**Mean**	**SD (s)**
read a paragraph containing two(2) or three(3) simple English sentences	107	50.7	104	49.3	211	2.48	.719
understand a paragraph containing two(2) or three(3) simple English sentences	113	53.6	98	46.4	211	2.46	.641
write sentences in simple English to form a paragraph	126	59.7	85	40.3	211	2.36	.693

As shown in Table 2, between 54.0 and 96.7 percent of the respondents agreed that the ELiTE module had enabled Year One pupils to achieve fifteen (15) out of the eighteen (18) objectives listed. The mean scores ranged between 2.55 and 3.20. Although the respondents generally agreed that the program has met its objectives, attention should be given to the objectives with low mean scores.

Table 2
The Appropriateness of ELiTE Module Content in Achieving the Objectives of ELiTE Program

The module content had enabled Year One pupils to….	**Did not agree**	**%**	**Agree**	**%**	**N**	**Mean**	**SD (s)**
Rewrite words in English correctly	12	5.7	199	94.3	211	3.21	.547
follow verbal instructions in simple English	7	3.3	204	96.7	211	3.18	.467
rewrite phrases in simple English correctly	22	10.4	189	89.6	211	3.08	.547
read English words	25	11.8	186	88.2	211	3.08	.597
rewrite sentences in simple English correctly	20	9.5	191	90.5	211	3.06	.513
understand questions in simple English	27	12.8	184	87.2	211	3.00	.502

The module content had enabled Year One pupils to….	Did not agree	%	Agree	%	N	Mean	SD (s)
write words in simple English correctly	38	18.0	173	82.0	211	2.96	.584
answer questions in simple English	32	15.2	179	84.8	211	2.95	.550
read phrases in simple English	46	21.8	165	78.2	211	**2.86**	.636
follow written instructions in simple English	53	25.1	158	74.9	211	**2.82**	.647
read sentences in simple English	76	36.0	135	64.0	211	**2.72**	.692
write phrases in simple English correctly	81	38.4	130	61.6	211	**2.69**	.651
ask questions in simple English	94	44.5	117	55.5	211	**2.58**	.638
write sentences in simple English correctly	97	46.0	114	54.0	211	**2.57**	.653
converse in English on simple topics	97	46.0	114	54.0	211	**2.55**	.705

6.2 To what extent are the teachers ready to implement the ELiTE program?

In order to asses the readiness of teachers in the implementation of the ELiTE program, respondents were required to state their degree of agreement in the areas mentioned below:

i. skills and confidence in implementing teaching and learning (T&L) using ELiTE module,
ii. confidence towards the objectives of ELiTE program, and
iii. support towards the expansion of the ELiTE program.

Table 3 indicates that between 62.6 and 98.6 percent of the respondents agree that they have the appropriate skills and are confident in implementing T&L using the ELiTE module. However, the respondents showed a low level of confidence (mean = 2.68) in teaching Science and Mathematics in English. The mean score for respondents' perceived competency in the English Language was also low (mean = 2.70) as seen in Table 3. This clearly indicates a need for further improvement.

Table 3
Skills and Confidence in Implementing T&L Using ELiTE Module

	Did not agree	%	Agree	%	N	Mean	SD
I am confident to explain subjects' concepts in English	76	36.0	135	64.0	211	2.68	.600
I am competent to communicate using English	79	37.4	132	62.6	211	2.70	.642
I am confident to communicate using English	67	31.8	144	68.2	211	2.76	.618
I feel comfortable using English to teach	63	29.9	148	70.1	211	2.75	.687
I am confident of becoming an effective ELITE teacher	53	25.1	158	74.9	211	2.83	.661
I am competent to prepare teaching aids for ELITE	36	17.1	175	82.9	211	2.94	.549
I collaborate with other teachers to improve my teaching effectiveness	3	1.4	208	98.6	211	3.27	.478

Teachers' degree of confidence towards the objectives of the ELiTE program was also evaluated in the study. As suggested in Table 4, the majority of the teachers agree that the ELiTE program has helped to improve Year One pupils' mastery of the English Language, especially among the weak (mean =3.29) and average pupils (mean = 3.23).

The majority of the respondents had also agreed that the ELiTE program has helped to improve Year One pupils' readiness to learn Science in English (mean = 3.04). However, respondents did not perceive the program as being able to assist pupils' readiness to learn Mathematics in English (mean = 2.52). The different mean scores of all items are shown in Table 4.

Table 4
Teachers' Confidence towards the Objectives of ELiTE Program

I am confident that the ELiTE program helps to improve….	Did not agree	%	Agree	%	N	Mean	SD
the mastery of the English language among weak pupils	13	6.2	198	93.8	211	3.29	.593
the mastery of the English language among average pupils	11	5.2	200	94.8	211	3.23	.550

I am confident that the ELiTE program helps to improve….	Did not agree	%	Agree	%	N	Mean	SD
pupils' readiness to learn Science	26	12.3	185	87.7	211	3.04	.642
the mastery of the English language among excellent pupils	54	25.6	157	74.4	211	2.90	.867
pupils' readiness to learn Mathematics	96	45.5	115	54.5	211	2.52	.801

Table 5 shows the degree of agreement among respondents in the expansion of the ELiTE program. From the findings, it was shown that the majority of the respondents did not agree that the programme should be expanded to help excellent pupils (mean = 2.38). Nevertheless, the majority had agreed on the expansion of the ELiTE program to cover all primary schools (mean = 3.20) and on improving the level of readiness among the weak and average pupils to learn Science and Mathematics in English (mean = 3.47) as seen in Table 5.

Table 5
Expansion of the ELiTE Program

I fully support the expansion of ELiTE program…	Did not agree	%	Agree	%	N	Mean	SD
to cover all primary schools in the country	30	14.2	180	85.3	211	3.20	.817
to improve the readiness among weak pupils	6	2.8	205	97.2	211	3.47	.554
to improve the readiness among average pupils	10	4.7	201	95.3	211	3.21	.567
to improve the readiness among excellent pupils	115	54.5	96	45.5	211	2.38	.839
to cover all pupils	88	41.7	123	58.3	211	2.58	.882

6.3 To what extent has the ELiTE program helped to improve Year One pupils' competency in the English language?

The findings from the study are presented under the following sub-headings:

i. Comparison of Achievement in Listening in English
ii. Comparison of Achievement in Speaking in the English Language
iii. Comparison of Achievement in Reading in English
iv. Comparison of Achievement in Writing in English
v. Comparison of Overall Achievement in English

The data which will be presented and discussed under each sub heading, was to establish the effectiveness of ELiTE programme on pupils' achievement in listening, writing, speaking and reading in English.

6.3.1 Comparison of Achievement in Listening in English

This subtopic illustrates the deviation in the pre and post treatment results of the listening component of the English Language among pupils' in both the experimental and control groups.

The means (X) and the standard deviations (s.d.) of the achievement in the pre test and post test of the two groups are shown in Table 6. The number of pupils (n) represents the pupils who had completed all the tests.

Table 6
Mean (X) and Standard Deviation (s.d.) of Test Scores on Achievement in Listening Skill

Test	**Experimental Group (n = 767)**				**Control Group (n = 767)**			
	Max	Min	$\overline{X}$	s.d.	Max	Min	$\overline{X}$	s.d.
Pre-Test (15)*	15	0	9.93	3.93	15	0	10.50	3.40
Post-Test (15)*	15	0	12.18	3.12	15	0	11.83	2.97

* = Numbers in parentheses refer to total score. Both groups performed better in the post test.

The pre test was administered to pupils in both groups to measure their proficiency in listening in English before the treatment. Pre-test testing denoted that the control group with a mean score of 10.50 scored higher than the experimental group, with a mean score of 9.93. The post test mean scores for the experimental and the control groups were 12.18 and 11.83, respectively. This shows that both groups performed better in the post test and the experimental group attained a higher mean score.

i. Test of Equivalence between the Treatment Groups

As mentioned, two intact classes with pupils with mixed ability were chosen for the treatment. The differences in scores of the pre test and the post test might be due to the initial differences in ability between both groups as intact classes were used in this study.

In order to determine the significant differences between the groups, with regards to achievement prior to the application of the treatment, an independent 2-tailed t-test was carried out to compare the experimental (ELiTE) group and control group on the pre test mean scores,

Table 7
T-Test to compare Experimental Group and Control Group on the Pre test Mean Score in Listening Skill

Group	n	$\overline{X}$	s.d.	t-value	Sig. P (2 – tailed)
Experimental	767	9.93	3.93	.029	.002
Control	767	10.50	3.40		

As shown in Table 7, the mean pre test score of the experimental group was 9.93 with a standard deviation of 3.93, while the mean score of the pre test of the control group was 10.50 with a standard deviation of 3.40. Based on further analysis of the mean differences, it was found that the calculated t-value of 0.029 was greater than the critical t-value at the 0.05 level of significance; $t(766) = 3.029$, $p<0.05$. This indicates that there is a significant difference between both groups before the intervention, prior to listening knowledge. The control group had a higher initial mean score than the experimental (ELiTE) group.

ii. Comparison between the experimental group and the control group on the Post test.

In this study, there was a need to investigate possible post-treatment differences between both groups and to test the null hypothesis of no significance between the experimental group and the control group with respect to the pretest. Thus, the analysis of covariance (ANCOVA) was carried out with the pre test scores as a covariate (pre test was held constantly) and the post test as the independent variable. The analysis of covariance (ANCOVA) could only be carried out if there was no interaction between the covariate and the independent variable.

It was done to determine whether any differences in achievement in the post test scores still existed between both groups after fractioning out the pretest score effect. Table 8 and Table 9 present the results of the analysis.

Table 8 shows that there is no significant difference interaction between the covariate and the independent variable $F(1,1520)=0.375$, $p>0.05$. Hence both can be assumed as having a linear relationship of a same gradient. Therefore, the researchers proceeded with the ANCOVA.

Table 8
F-Test To Determine the Interaction between the Covariate (pre test) Score and the Independent Variable (post test) Score in Listening Skill

Source	Sum of Squares	Degree of Freedom	Mean Square	F	Sig.	Partial Eta Squared
Covariate Pre-test	415.36	1	415.36	46.081	0.000	0.029
Interaction Effects Group*Pre-test	3.38	1	75.65	.375	0.540	0.000

R Squared = .034 (Adjusted R Squared = .032); adjusted mean control group = 11.788 adjusted mean experimental group = 12.228

Table 9 shows that the differences seen are statistically significant, even after fractioning out the pre test effect, $F(1,1531) = 8.228$, $p < 0.05$.

Table 9
ANCOVA of the Performance of Pupils, Classified by Treatments with the Pre test in Listening Skill as a Covariate

Source	Sum of Squares	Degree of Freedom	Mean Square	F	Sig.	Partial Eta Squared
Covariate Pre-test	435.25	1	435.25	48.307	0.000	0.031
Interaction Effects Group*Pre-test	74.14	1	74.14	8.228	0.004	0.005

R Squared = .034 (Adjusted R Squared = .033); adjusted mean control group = 11.784 adjusted mean experimental group = 12.225

Hence, the ELiTE programme can be considered a contributing factor towards higher achievement in the development of the listening skills. The adjusted mean of the experimental group (12.225) was higher than the control group (11.784), indicating that the ELiTE group performed better than the control group in listening skill.

6.3.2 Comparison of Achievement in Speaking in the English Language

This subtopic deals with results of the pupils' achievement in speaking in the English language of both the experimental and the control groups. Initially, the scores were analyzed using t-test to find out the equivalence of prior skill in spoken English of both groups.

i. Performance of the experimental/control groups in the pre test and post test

The means (X) and standard deviations (s.d.) of the achievement in the pre test and post test of the two groups are shown in Table 10 below.

Table 10
Mean (X) and Standard Deviation (s.d.) of Test Scores on Achievement in Speaking in English

Test	Experimental Group (n = 767)				Control Group (n = 767)			
	Max	Min	$\overline{X}$	s.d.	Max	Min	$\overline{X}$	s.d.
Pre-Test (15)*	20	0	9.90	5.16	20	0	10.33	5.26
Post-Test (15)*	20	1	14.22	5.20	20	0	13.05	5.80

* = Numbers in parentheses refer to total score. Both groups performed better in the post test.

Table 10 clearly indicates that, both groups performed better in the post test. In the pre test, the experimental group scored a mean of 9.90 out of 15, whereas the mean score of the

control group was 10.33. This implies a difference of 0.43. In the post test, the mean score of the experimental group increased from 9.90 to 14.22 and the mean score of the control group increased from 10.33 to 13.05. Therefore, the pupils in the experimental group had scored higher than the control group.

ii. Test of Equivalence between the Treatment Groups

As mentioned earlier, the differences in scores of the pre test and the post test might be due to initial differences in ability between both groups as intact classes were used in this study.

An independent 2-tailed t-test was carried out to compare the pretest mean scores between the experimental (ELiTE) group and control group, in order to determine if there were any significant differences between the experimental and control groups, in relation to achievement prior to the application of the treatment. The findings are as shown in Table 11.

Table 11
T-Test to compare Experimental Group and Control Group on the Pretest Mean Score in Speaking in English

Group	**n**	$\overline{X}$	**s.d.**	**t-value**	**Sig. P (2 – tailed)**
Experimental	767	9.90	5.16	1.617	0.106
Control	767	10.33	5.26		

As shown in Table 11, the t-value, $t(766) = 1.617$, $p>0.05$. It indicates that there is no significant difference prior to speaking in English between both groups before the intervention. The control group and the experimental group were of equal standard in the beginning of the program. So the t-test on the gain scores (to calculate the difference between the pretest and the posttest scores) was carried out to identify any significant differences between the experimental and control groups.

Table 12 shows the t-value on the gain scores, $t(766) = -4.780$, $p < 0.05$ which is a statistically significant difference.

Table 12
T-Test to compare Between the Experimental Group and Control Group on the Gain Mean Score in Speaking in English

Group	**n**	$\overline{X}$	**s.d.**	**t-value**	**Sig. P (2 – tailed)**
Experimental	767	4.32	6.05	-4.780	0.000
Control	767	2.73	6.93		

The gain mean score of the experimental group (4.32) was higher than the control group (2.73) after the intervention programme. Therefore, it can be suggested that the

experimental group has shown a more significant improvement in their spoken English, after being exposed to the ELiTE module.

6.3.3 Comparison of Achievement in Reading in the English Language

This subtopic deals with the results of the pupils' achievement in reading in English for both the experimental and control groups. The scores were initially analysed using t-test to find out the equivalence of prior skill in reading in English of both groups.

i. Performance of the experimental/control groups in the pre test and post test

The means (X) and standard deviations (s.d.) of the achievement in pre test and post test of the two groups are shown in Table 13.

Table 13
Mean (X) and Standard Deviation (S.D.) of Test Scores on Achievement in Reading in English

Test	Experimental Group (n = 767)				Control Group (n = 767)			
	Max	Min	$\overline{X}$	s.d.	Max	Min	$\overline{X}$	s.d.
Pre-Test (15)*	25	0	12.03	6.85	25	0	12.59	6.69
Post-Test (15)*	25	0	17.11	7.25	25	0	15.86	7.25

* = Numbers in parentheses refer to total score. Both groups performed better in the post test.

As seen in Table 13, both groups performed better in the post test. The mean pre test for the experimental group was 12.03 out of 25, whereas the mean score for the control group was 12.59. In the post test, the mean sores of the experimental group increased from 12.03 to 17.11, while the mean score of the control group increased from 12.59 to 15.86. It is obvious that the pupils in the experimental group had scored higher than the control group.

ii. Test of Equivalence between the Treatment Groups

In order to determine if there were any significant differences between the experimental group and control group with regard to achievement prior to the application of the treatment, an independent 2-tailed t-test was performed to compare the mean scores of both groups in the pre test as shown on Table 14.

Table 14
T-Test to compare Between the Experimental Group and Control Group on the Pretest Mean Score in Reading in English

Group	n	$\overline{X}$	s.d.	t-value	Sig. P (2 – tailed)
Experimental	767	12.03	6.86	1.610	0.108
Control	767	12.59	6.69		

Table 14 shows that the t-value, $t(766) = 1.610$, $p>0.05$. This indicated that there was no significant difference prior to reading in English between both groups before the

intervention. The control group and the experimental were of equal standard in the beginning. So the t-test on the gain scores (to calculate the difference between the pre test and the post test scores) was carried out to identify any significant differences between the experimental and control groups.

Table 15 shows the t-value on the gain scores, $t(766) = -3.874$, $p < 0.05$ which is a statistically significant difference.

Table 15
T-Test to compare Experimental Group and Control Group on the Gain Mean Score in Reading Skill

Group	**n**	$\overline{X}$	**s.d.**	**t-value**	**Sig. P (2 – tailed)**
Experimental	767	5.08	9.18	-3.874	0.000
Control	767	3.29	8.91		

The gain mean score of the experimental group (5.08) was higher than the control group (3.29) after the intervention. Therefore, it can be proposed that the experimental group has shown a more significant improvement in their reading skills in English, after being exposed to the ELiTE module.

6.3.4 Comparison of Achievement in Writing in English

This subtopic presents the results of the pupils' achievement in writing in English for both the experimental and the control groups. The scores were analysed using t-test to find out the equivalence of prior skill in writing in English of both groups.

i. Performance of the experimental/control groups the in pre test and post test

The means (X) and standard deviations (s.d.) of the achievement in the pre test and post test of the two groups are shown in Table 16 below.

Table 16
Mean (X) and Standard Deviation (s.d.) of Test Scores on Achievement in Writing in English

Test	**Experimental Group (n = 767)**				**Control Group (n = 767)**			
	Max	Min	$\overline{X}$	s.d.	Max	Min	$\overline{X}$	s.d.
Pre-Test (15)*	33	0	17.65	6.32	33	0	17.35	8.01
Post-Test (15)*	33	0	23.02	7.21	33	0	20.12	9.11

* = Numbers in parentheses refer to total score. Both groups performed better in the post test.

Table 16 shows that both groups performed better in the post test. The mean score in the pre test of the experimental group was 17.65 out of 33, whereas the mean score of the control group was 17.35. In the post test, the mean score of the experimental group

increased from 17.65 to 23.02, while mean score of the control group increased from 17.35 to 20.12. Hence, the pupils in the experimental group had scored higher than the control group.

ii. Test of Equivalence between the Treatment Groups

An independent 2-tailed t-test was performed to compare the mean scores of the experimental (ELiTE) and control groups in the pre test. It was also done to determine if there were any significant differences between both groups with regards to achievement prior to the application of the treatment as shown in Table 17.

Table 17
T-Test to compare Between the Experimental Group and Control Group on the Pre test Mean Score in Writing in English

Group	**n**	$\overline{X}$	**s.d.**	**t-value**	**Sig. P (2 – tailed)**
Experimental	767	17.65	6.32	-0.818	0.414
Control	767	17.35	8.01		

As shown in Table 17, the t-value t(766) = -0.818, p > 0.05. This indicated that there was no significant difference prior to writing in English between both groups before the intervention. The control group and the experimental group had equal ability in writing in the English Language,, thus the t-test on the gain scores (to calculate the difference between the pretest and the posttest scores) was carried out to trace any significant difference between the experimental and control groups.

Table 18 shows the t-value on the gain scores, t (766) = -5.322, p < 0.05 which is a statistically significant difference.

Table 18
T-Test to compare Between the Experimental Group and Control Group on the Gain Mean Score in Writing in English

Group	**n**	$\overline{X}$	**s.d.**	**t-value**	**Sig. P (2 – tailed)**
Experimental	767	5.37	8.28	-5.322	0.000
Control	767	2.77	10.72		

The gain mean score of the experimental group (5.37) was higher than the control group (2.77) after the intervention. Therefore, it can be proposed that the experimental group has shown a more significant improvement in their writing skill after being exposed to the ELiTE module.

6.3.5 Comparison of Overall Achievement in English

This subtopic describes the pre and post treatment results of the overall achievement in English for both the experimental and the control groups.

i. Performance of the experimental/control groups in pre test and post test

The means (X) and standard deviations (s.d.) of the achievement in the pre test and post test of the two groups are shown in Table 19.

Table 19
*Mean (X) and Standard Deviation (*s.d*.) of Test Scores on Overall Achievement in English*

Test	**Experimental Group (n = 767)**				**Control Group (n = 767)**			
	Max	Min	$\overline{X}$	s.d.	Max	Min	$\overline{X}$	s.d.
Pre-Test (15)*	93	3	49.51	19.17	93	2	50.77	20.29
Post-Test (15)*	93	9	66.53	19.85	93	2	60.87	22.58

* = Numbers in parentheses refer to total score. Both groups performed better in the posttest.

As seen in Table 19, both groups performed better in the post test. The mean score in the pre test of the experimental group was 49.51 out of 93, while the mean score of the control group was 50.77. In the post test, the mean score of the experimental group increased from 49.51 to 66.53 and the mean of the control group increased from 50.77 to 60.87. It is evident that the pupils in the experimental group had scored higher than the control group.

ii. Test of Equivalence between the Treatment Groups

An independent 2-tailed t-test was carried out to compare experimental (ELiTE) group and control group on the pretest mean scores, so as to determine if there were any significant difference between the experimental and control groups in relation to the achievement, prior to the application of the treatment. Findings are as shown in Table 20.

Table 20
T-Test to compare Between the Experimental Group and Control Group on the Pretest Overall Mean Score in English

Group	**n**	$\overline{X}$	**s.d.**	**t-value**	**Sig. P (2 – tailed)**
Experimental	767	49.51	19.17	1.245	0.213
Control	767	50.77	20.01		

As shown in Table 20, the t-value t(766) = 1.245, p > 0.05. This indicates that there is no significant difference prior to the overall achievement in the English Language between both groups before the intervention. The control group and the experimental were at par in the beginning, so the t-test on the gain scores (to calculate the difference between the pre test and the post test scores) was carried out to identify any significant differences between the experimental and control groups.

Table 21 shows the t-value on the gain scores, $t(766) = -5.345$, $p < 0.05$ which has a significant difference statistically.

Table 21
T-Test to compare Between the Experimental Group and Control Group on the Overall Gain Mean Score in English

Group	**n**	$\overline{X}$	**s.d.**	**t-value**	**Sig. P (2 – tailed)**
Experimental	767	17.02	23.50	-5.345	0.000
Control	767	10.11	27.00		

The gain mean score of the experimental group (17.02) was higher than the control group (10.11) after the intervention. Therefore, it can be suggested that the experimental group has shown a significant improvement in overall English performance scores after being exposed to the ELiTE module.

7.0 RECOMMENDATIONS

The following recommendations are made based on the research findings:

i. There is a need to expand the ELiTE programme after perfecting certain aspects such as the construction of module and the implementation of strategies.

ii. A content review of the ELiTE Module is crucial as the existing module does not place emphasis on Mathematics. Furthermore, the content of the current Module does not meet the expectations of the high achievers.

iii. The ELiTE programme should be extended to all schools in stages, so as to give teachers, administrators, and officers at the District Education Office, as well as the State Education Department opportunities to get accustomed to the programme. A more organized dissemination of information regarding this programme would enable teachers and headmasters to implement the programme, in a more confident and effective manner.

iv. In-depth research should be carried out to determine the effectiveness of the current method of implementing the programme. A detailed study is needed in order to identify the most appropriate target group for this programme. It is also proposed that a whetting process, such as the *Early Intervention Classes for Reading and Writing* (*KIA2M,* be implemented to ensure that only pupils who need intervention are included in this programme. There is also a need to provide financial aid as well as training for school administrators to enable them to implement this programme more effectively in their schools.

8.0 CONCLUSION

The ELiTE programme has been successful in increasing Year One pupils' basic proficiency of the English Language. Therefore, it is proposed that the programme be extended to other schools, provided certain improvements are made to the process of implementation to ensure more effective results. It is further suggested that the positive outcomes of the programme be communicated to the school community, parents and the community at large, in order to gain support for this programme and to avoid any misconceptions about the ELiTE programme.

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The Development of Quality Management Indicators for Vocational Education Curriculum of Business and Hospitality Sector, in the Colleges, the Office of Vocational Education Commission

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Abstract

The purpose of the research was : 1) to develop the Quality Management of Vocational Education Curriculum Indicators by using the MBNQA model for Business and Hospitality Sector in the colleges, the office of Vocational Education Commission 2) to test the construct validity model of Quality Management of Vocational Education Curriculum Indicators with the empirical data 3) to develop the handbook of Quality Management of Vocational Education Curriculum Indicators of Business and Hospitality Sector in the colleges, the office of Vocational Education Commission.

The study consisted of 4 phases. The first phase, the management of Vocational Education Curriculum was studies by 150 people in the group of administers and teachers in the colleges teaching the course of Business and Hospitality Sector for data to create the Quality Management Indicators. The second phase, the Quality Management of Vocational Education Curriculum Indicators of Business and Hospitality Sector were created by 20 specialists under the MBNQA model. The third phase was to confirm the indicators with the empirical data by 520 people in a group of administrators and teachers in Business and Hospitality Sector, in colleges. LISREL 8.72 was used to test fitness of the model by Confirmatory Factor Analysis Method. The fourth phase, was to develop the Handbook for self assessment and using in Chiang Mai Vocational college. The study found the Quality Management of Vocational Education Curriculum Indicators consisted of 7 factors and 63 indicators which were 8 indicators of Leadership, 7 indicators of Planning Strategy, 6 indicators of Customer and Market Focus, 7 indicators of Measurement Analysis and Knowledge Management, 9 indicators of Human Resource Focus, 14 indicators of Process Management and 12 indicators of Business Result. The indicators were efficient in self assessment of the Colleges in the Business and Hospitality Sectors.

1. Introduction

1.1 The Importance of Research Problem Background

The purpose of Vocational Education and Training is to produce and develop manpower as skilled, technical and technological levels in various areas. These are related to the situations of economy, social, tradition, environment and technology progress and able to response the labor market needs and to be a self-employment. Vocational Education is the importance foundation developing manpower to serve the economy, and social of the country.

The Office of Vocational Education Commission has the responsibility for Vocational Education management with providing the courses of Certificate, Diploma, Higher Diploma and short-course on 9 major fields as follow: Industry, Home Economics, Commerce and Business Administration, Arts and Crafts, Tourism and Hospitality, Textile Industry, Agriculture, Fisheries, and Information Technology and Communication (The Bureau of Vocational Education Standards and Qualification, 2002). And this had prepared for the Degree of Technology or Practical Field. The curriculum standard framework of each level had been provided, it will be the guidelines to develop the vocational education curriculum and to create strength for vocational education curriculum management to further practice.

The Vocational Education Curriculum, had been developed orderly, focused on initiative to Competency-Based Curriculum which came from occupational standards or competency standards. This formed to be the General Vocational Education Standards in various fields of the curricula. Almost of the former curricula were developed by the central office but the colleges can develop the curricula by themselves and authorize by The Office of Vocational Education Commission .After the Vocational Education Act was addressed, Vocational Education Management was provided to prepare: relevant laws, institute establishment, and opening the degree program of technology or practical field. The vocational education institutes and colleges have to administrate the vocational education management by institute board who has to monitor, while the central office will provide standards, rationale, guidelines clearly that the institutes can process unity and effectively. The office of Vocational Education Commission has to monitor in quality management of institutes and colleges. The administrators and staff will be the importance factor which will process to the target. Information technology operation can reflect the curriculum management quality, actually, of what the level was. Curriculum administrators should use the qualitative data for making decision, planning curriculum development with related to processed problem situation including its protection and immediate solving. This used the instrument for testing; quality, monitor and quality assessment of the curriculum and was announced to the public for what the curriculum quality management level was. The above mention was the importance responsibility in quality educational management and development. That was the providing information technology to indicate the quality situation of education, (Nonglak, 1998: 1). And the quality assessment of educational system was qualitative data which educational administrators can use for making decision and developing plan suitably and harmoniously to problem situations. The above information technology procedure is called **“indication”**. Thus educational indicator development should develop indictors both output and process or performance steps that passed the test to reliability. The process indicators would be importance especially the quality curriculum management process, it will be the importance process to the quality educational management. If the curriculum was developed in the right steps, but lack of quality management, it will be the impact to the quality of educational output.

3

The system of education quality award of USA, Malcom Baldrige National Quality Award (MBNQA) was brought to be the guidelines for criteria providing of excellence management in quality and the educational management in technology. The mentioned award was the pattern in creating quality awards of other countries, for example TQM of Thailand. The factors of MBNQA consisted of Leadership, Strategic Planning, Customer and Market Focus, Measurement Analysis and Knowledge Management, Human Resource

Focus, Process Management and Business Result. These were their key words, respectively ; co-operative, competency-based, system of work, enterprises, manpower competency of enterprise need, manpower of enterprise need, and commitment with enterprise (Baldrige, 2007). The system had the quality inspection guidelines relating to the policy of vocational education management which can manage the quality of curriculum management clearly.

Thus it should study the development of the Quality Management of Vocational Education Curriculum Indicators, the course of Business and Hospitality Sector, in the office of Vocational Education Commission (OVEC) colleges. This was the regulations and guidelines framework which vocational education institutions and colleges can manage curriculum of Business and Hospitality, effectively and lead to the target, vocational education quality.

1.2 Objectives

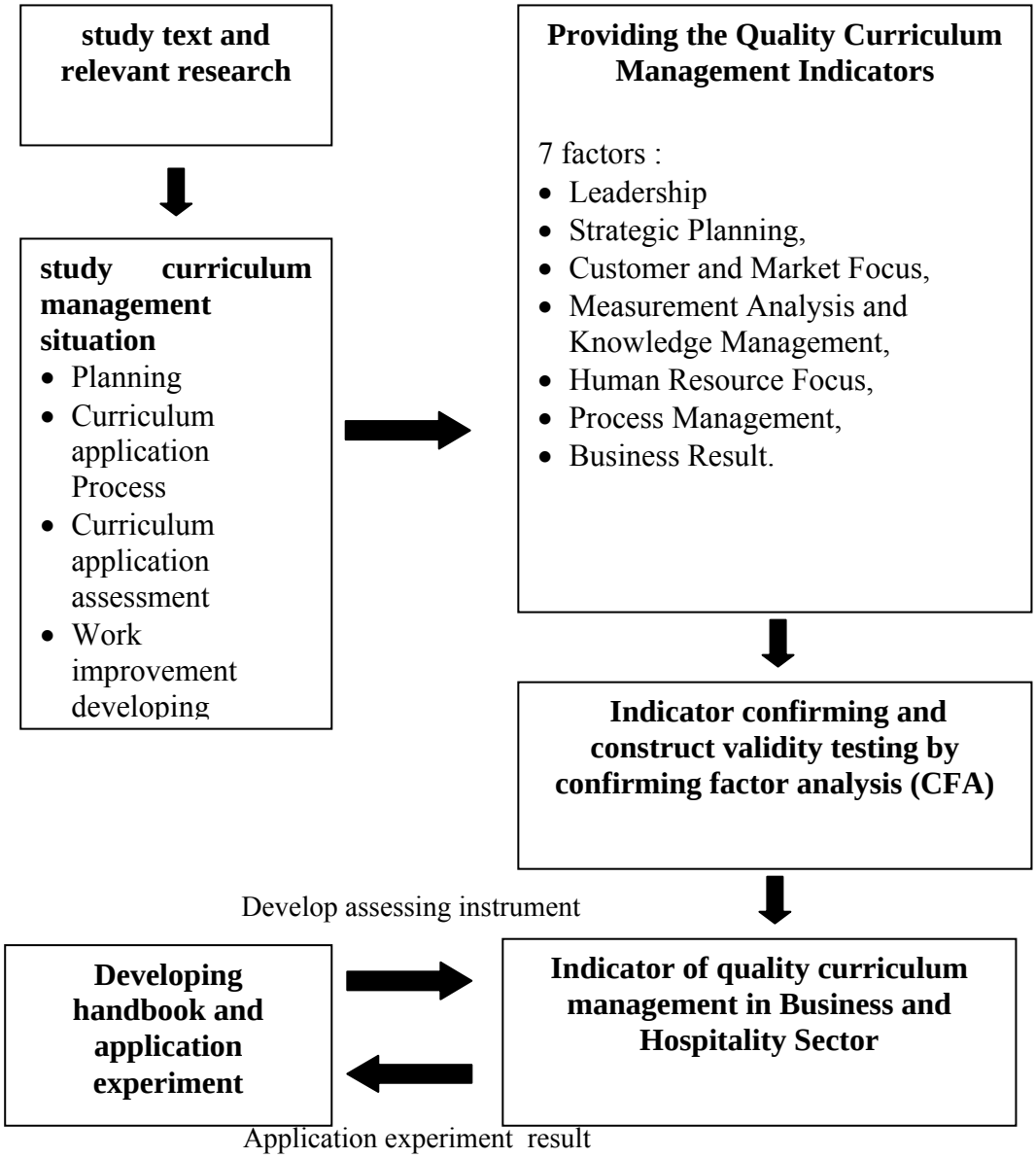
1.2.1 to develop the Quality Management of Vocational Education Curriculum Indicators by using the MBNQA model for Business and Hospitality sector in the colleges, the office of Vocational Education Commission,
1.2.2 to test the construct validity model of Quality Management of Vocational Education Curriculum Indicators with the empirical data,
1.2.3 to develop the handbook of Quality Management of Vocational Education Curriculum Indicators of Business and Hospitality sector in the colleges, the office of Vocational Education Commission.

1.3 Research Range

The area of study are research format, population and factors as follow :

1.3.1 research methodology was research and development, and used MBNQA model, USA for study the Quality Management of Vocational Education Curriculum Indicators for Business and Hospitality,
1.3.2 population in the research :
1) population, in the process of college management situation study, were administrators, teachers and students in OVEC colleges, Business and Hospitality Sector,
2) population, in the process of focus group for indicator analysis, were vocational education experts,
3) population, in the process of indicator confirming and testing construct validity of the Quality Management of Vocational Education Curriculum Indicators in Business and Hospitality, were administrators and teachers in OVEC colleges in Business and Hospitality Sector,
1.3.3 factors in the research were 7 factors from MBNQA model, USA : Leadership, Strategic Planning, Customer and Market Focus, Measurement Analysis and Knowledge Management, Human Resource Focus, Process Management, and Business Result.
1.3.4 developing the handbook, for indicator using, was consisted of preface, objective, definition, factors, indicators and data source/ data collecting,
1.3.5 this research did not include the criteria assessment providing.

2. Conceptual Framework in the research



3. Research Procedure Methodology

This research using the methodology of research and development which had 4 phases.

3.1 The 1st phase was to study of vocational education curriculum management situation in OVEC colleges. Samples were purposive sampling for 150 persons research instrument was questionnaire for 5 levels of rating scales for 98 items on: vocational education curriculum management situation, the step of preparation or planning, the step of procedure (learning-teaching process, supported tasks and promoted curriculum usage), the step of assessment, and the step of procedure improvement developing. Five experts tested content consistency by Index of Item Objective Congruence (IOC) analysis and the result was 0.92. It was tried out with the sampling of 30 OVEC colleges administrators and teachers in Hospitality Business. It was analyzed questionnaire reliability by α- coefficient (Cronbach) and found $\alpha = 0.89$.

3.2 The 2nd phase was to provide the indicators of vocational education curriculum management. The empirical data of vocational education curriculum management situation was analyzed by MBNQA model which consisted of 7 factors as; the 1st factor : Leadership of administrators, the 2nd factor : Strategic Planning on Business and Hospitality, the 3rd factor : Customer and Market Focus and Co-operative in Business and Hospitality, the 4th factor : Measurement Analysis and Knowledge Management in the college, the 5th factor : Human Resource Focus in colleges, the 6th factor : Process Management, and the 7th factor : Business Result of students, college staff, enterprises and social in Business and Hospitality. The focus group of 20 experts (form purposive sampling) evaluated 7 factors, 98 indicators and concluded their opinion form questionnaire. The questionnaire was about suitableness of indicators and the result was provided suitable indicators which frequency was not less than 80%.

3.3 The 3rd phase was to confirm indicators and test construct validity of the quality management of vocational education curriculum indicators for Business and Hospitality, in OVEC colleges by MBNQA model from purposive sampling of 550 OVEC colleges administrators and teachers. The 1st instrument was to confirm the suitableness of indicators of 7 factors and 98 indicators. The 5 levels in the questionnaire were provided suitable indicators in the level 3,4 and 5 and unsuitable indicators in the level 1 and 2. More than 20% of unsuitable indicators were cut off. The 2nd instrument was to test construct validity of suitableness of indicators which consisted of 7 factors and 63 indicators and was analyzed by Confirmatory Factor Analysis Method of LISREL 8.72 program.

3.4 The 4th phase was to develop handbook of indicators for self assessment by focusing group of 20 specialists. The handbook was consisted of preface, explanation, definition, quality factors, indicators, data source/ data collecting. The 5 levels in questionnaire were tested by 5 experts that the Index of Item Objective Congruence (IOC) analysis was 0.94., and tried out in Chiang Mai Vocational College.

4. Research Conclusion

4.1 The result of the study the empirical data from management situation of Vocational Education Curriculum for Business and Hospitality Sector in OVEC colleges

The questionnaire was about planning step, procedure step (learning–teaching, measuring and evaluation, supporting and promoting of curriculum using), performance inspection and assessment step, and work procedure improvement. Overall of each step was real performance in the medium level, while the suggestion had to perform in high level and if compare the 2 types of performance found that there were significant differently at the statistic 0.01. It revealed that management situation of Vocational Education Curriculum for Business and Hospitality Sector in OVEC colleges had to process.

4.2 The result of providing the Quality Management of Vocational Education Curriculum Indicators for Business and Hospitality Sector by MBNQA model

The Quality Management of Vocational Education Curriculum consisted of 7 factors which were Leadership, Strategic Planning, Customer and Market Focus, Measurement Analysis and Knowledge Management, Human Resource Focus, Process Management and Business Result. The experts had focus group to analyze and conclude that more than 80% of suitableness of indicator will be the 98 provided quality indicators.

4.3 The result of confirming indicators and testing the construct validity of the Quality Management of Vocational Education Curriculum for Business and Hospitality Sector in OVEC colleges with MBNQA model

The administrators and teachers confirmed the suitableness of indicators in 7 factors, 63 indicators. The indicators were analyzed construct validity by using Confirmatory Factor Analysis Method and found that MBNQA model was harmonized with the evident data. The result was: Chi-squire was 81.14, degree of freedom was 1883, GFI was 1.00, AGFI was 0.99, RMSEA was 0.0 and p was 1.00, it revealed that Chi-squire was not differently from 0 at the level of statistic significant 0.01. Each factor value of 63 indicators were 0.53-0.68 at the statistic significant 0.01, it revealed that the 63 indicators were the Quality Management of Vocational Education Curriculum for Business and Hospitality Sector in OVEC colleges. The factors value of 7 factors were 0.95-1.01 at the statistic significant 0.01, it revealed that all 7 factors were the importance factors of the Quality Management of Vocational Education Curriculum for Business and Hospitality Sector in OVEC colleges. 7 factors and 63 indicators were : 8 indicators of Leadership, 7 indicators of Strategic Planning, 6 indicators of Customer and Market Focus, 7 indicators of Measurement Analysis and Knowledge Management, 9 indicators of Human Resource Focus, 14 indicators of Process Management, and 12 indicators of Business Result.

4.4 The result of handbook developing of the Quality Management of Vocational Education Curriculum for Business and Hospitality Sector in OVEC colleges. And the indicators were tried out for self evaluation at Chiang Mai Vocational college, found that the indicators can assess the Quality Management. The college assessed all of indicators from the evident document and relevant data following the handbook, and objectives of self assessment in the Quality Management of Vocational Education.

5. Research Suggestion

5.1 Suggestion in application the research result:

1) OVEC colleges and other colleges which used Business and Hospitality Curriculum, can use the Quality Management of Vocational Education Curriculum Indicators for Business and Hospitality to be the guidelines in college administration and self quality assessment for improving Business and Hospitality Curriculum,
2) OVEC can develop the Quality Management of Vocational Education Curriculum Indicators for Business and Hospitality in order to apply for industry and agriculture including all of OVEC curricula.
3) Enterprise and other related organizations as the office for National Education Standards and Quality Assessment (ONEQSA), the Institute of National Test and other offices which expected to be established in the future as the Institute of Vocational Qualification. They can use the indicators form the research to provide standard criteria of Management of Vocational Education Curriculum Indicators for Business and Hospitality at the same standards and can provide quality levels of colleges in every organization.

5.2 Suggestions for next research :

1) This research, researcher did not develop criteria, then interested persons can study for next research and can develop suitable criteria for assess in the quality management levels of Vocational Education Curriculum Indicators for Business and Hospitality including other fields which were processed.
2) This research was developed indicators by MBNQA model, interested persons can consider specific model or other models,
3) Interested persons can develop the quality management of Vocational Education Curriculum Indicators for Business and Hospitality in every organization for developing the same quality indicators at the country level.

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Appendix

7 Factors and 63 indicators

1. Factor of Leadership consists of 8 indicators

1) having vision and can use it to provide strategic plan,
2) being the leader of change agent, has creative thinking, always develop work better,
3) having ability in work administration which lead to provided target in tangibles.
4) good relationship, can manage college staff using their potential in work, including to co-operate with external organizations at the level of province, enterprise and local,
5) supporting team work, co-operative making decision, and always having a meeting with college staff,
6) setting systems of monitoring, taking care college staff in morals, ethics, work ethics, and vocational standards,
7) developing colleges and curriculum management and administration by using the information technology and knowledge,
8) providing systems of monitoring and evaluation by planning the action plan clearly and taking its result for work development and strategic plan in the next period.

2. Factor of Strategic Planning consists of 7 indicators

1) providing policy and strategy in Hospitality Business which was related to the policy and strategy of Ministry of Education, the Office of Vocational Education Commission and other organization in Hospitality Business.
2) the number of meeting, college administration board, college staff, enterprise in order to plan, preparation, by analyzing policy and strategy for curriculum management and learning-teaching management completely and tangibles,
3) providing strategy in standard quality in Hospitality Business by using system and tactics of quality assurance in vocational education curriculum management for Hospitality Business,
4) providing strategy in competency-based curriculum development, learning-teaching, focusing on students to have competence in their fields of career,
5) providing strategy in academic administration and vocational services for social, community in acceptance and creating renown for college,
6) providing strategy in college staff both development and willpower creating for college strength,
7) providing strategy in co-operative network creating, co-operative resource application with enterprise, other organizations community and local,

3. Factor of Customer and Market Focus consists of 6 indicators

1) the number/list of participants and college administration board from enterprise, stakeholder, parent, community, including other college administration board for planning work development in Hospitality Business,
2) the number/list of research or report about manpower need in Hospitality Business both overall the level of country/ region/ province/ local which were studied and analyzed for providing major field and the number of students target each major field,
3) the number and quality of curricula/ major field/ specific subjects, college had developed competency-based with enterprise and related organizations to actually need.

4) the number and list of enterprise and co-operative organization in learning-teaching of dual vocational education, on the job training, and resource recruitment in lecturer, equipment, learning-teaching media,
5) the levels of suitableness/ satisfaction of enterprise, other organizations that co-operated providing and procedure,
6) providing guidance for finished students in the secondary school, high school, and workers in enterprise including public relations with various medias for customer enterprise organizations and social to understand in vocational education learning.

4. Factor of Measurement Analysis and Knowledge Management consists of 7 indicators

1) providing system and measuring instruments to get data that was analyzed by statistic method and evaluation to be reliability data,
2) the quality levels of measuring, analysis, and evaluation were knowledge and information technology, 11
3) providing data-based that had the one response clearly, setting the system data-based in safety, consistency, cover, and reliability,
4) the quality levels of information technology including knowledge for vocational education management,
5) the time number of using information technology and knowledge in work developing within 1 academic year,
6) having the system of information management to be present and efficiency and to improve information management continually,
7) establishing the manpower center in colleges to be information technology for Hospitality Business students and be the network to the central office.

5. Factor of Human Resource Focus consists of 9 indicators

1) the percentage of gained budget for suitably developing college staff,
2) the percentage of developed staff in business and hospitality in knowledge and their own vocational major field including further study and practice/ training in the enterprise,
3) the satisfactory levels of college staff for learning atmosphere setting, benefit, facility, and other services will be motivation in work,
4) the percentage of vocational staff on business and hospitality can teach according to their major field, skillful and expertness,
5) the proportion between ordinary teachers, according to major fields/ major subjects/ specific subjects in business and hospitality, and students,
6) the number of research, invention, innovation and academic work for developing curriculum management, learning- teaching in business and hospitality that staff have done and/ or be an advisor and or participate with enterprise and local,
7) the proportion among teaching task, advisor, service to external organizations, community, local of teachers in business and hospitality that were suitable and performed effectively,
8) having teaching and department task assessment in 1 academic year for quality development in business and hospitality,
9) the suitable/ satisfactory levels of work assessment system and salary promotion with justice and transparency to enhance teacher motivation in Business and Hospitality Sector.

6. Factor of Process Management consists of 14 indicators

1) preparation planning for learning-teaching management before semester start,
2) the quality levels of competency-based curriculum which was developed from labor market need,
3) the learning plan was provided completely following to course structure of major field for curriculum management preparation, 12
4) the quality levels of various learning process setting were focusing on students, vocational skill practicing, real situation practicing in order to develop by their own nature with complete potential and successful following to subject standards and major vocational standards,
5) the number and quality of tasks/ project/ innovation/ invention which were created from learning-teaching process,
6) the percentage of students who had work experience from enterprise, especially dual vocational education system and on the job training,
7) the quality levels of developing student activities in morals, ethics and expected characteristic behaviors in work by co-working with others and to be self employment,
8) the suitable levels of building, place, classroom, laboratory room, self-assess center and area for practicing were suitable with subjects, including system of safety environment and learning facility of colleges,
9) the quality levels of teaching plan/ learning plan which had analyzed curriculum analysis and provided the competence that student should have knowledge, understanding, practice ability and expected habits according to the subject characters for making a teaching plan,
10) the suitable of initial supervision system was to monitor, take care in curriculum using, learning-teaching management and measuring and assessing,
11) the percentage of college budgeting for material, equipment, instrument for suitable learning-teaching management,
12) the suitable/ sufficient levels of media, innovation, test, handbook which were used for learning-teaching,
13) the quality of curriculum administration of major field/ major subjects/ specific subjects in business and hospitality,
14) the achievement of student learning was following the subject standards and major field standards.

7. Factor of Business Result consists of 12 indicators

1) the proportion between graduated students went to work and graduated students went to study, compared with all graduated students in 1 academic year,
2) the percentage of students in hospitality business were accepted in knowledge, and ability to work,
3) the number of students in hospitality business trend will be increasing,
4) the satisfaction levels of students and graduated persons were gained experience from the college,
5) the percentage of college staff in business and hospitality were developed both knowledge, career experience and educational qualification, 13
6) the quality levels of work with full potential of college staff,
7) the satisfaction/ understanding levels of enterprise organizations/ parent/ community in the local area on curriculum and learning-teaching management of college,

8) the satisfaction levels of enterprise, relevant organizations related to the quality of graduated students and working in the enterprise and organizations,
9) the college provided the curriculum in business and hospitality was accepted by enterprise, organizations, social, community and co-operated in vocational education management,
10) the quality of providing vocational education management in hospitality business was accredited from the Office for National Education Standards and Quality Assessment,
11) the satisfaction levels of relevant people to vocational education in vocational service and training, and helping community/local,
12) the procedure result can plan for vocational education in business and hospitality in various levels such as : the office of commission, the ministry of Education and related organizations.

Reconceptualisation of The Construct 'Ability to Conduct A Research' and Developing A Model of An Alternative Assessment Instrument for Geography

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Abstract

The aim of this research is to reconceptualise the construct 'Ability to conduct a research' for Lower Secondary School Geography. Based on this aim, a valid and reliable alternative assessment task template and four analytic scoring rubrics were developed. A performance task was generated from the template. The performance task was evaluated to provide evidence of its trustworthiness and to investigate whether the template can generate performance task that can assess the construct 'Ability to conduct a research'. The scoring rubrics were also evaluated to provide evidence of their trustworthiness and to investigate whether they capture the criteria of the assessed construct. Mix methods design was applied to this research. Qualitative and quantitative methodologies were used to collect data and to determine the validity and reliability of the alternative instrument. Face validity, content validity, construct validity and inter-rater reliability were determined. The research consists three phases. Phase one involved gathering information to provide the basis for reconceptualising the construct and identifying the steps to develop the task template and scoring rubrics. The information from this phase was validated through triangulation of documents such as Lower Secondary School Geography curricullum, scoring rubrics from other assessment institutions, inquiry theories and geography textbooks with experts opinions. Phase two of this research is the development of the alternative assessment task and scoring rubrics. In order to assure the construct and content validity of the performance task, four expert item builders linked the task template and the scoring rubrics in the development stage of the alternative assessment task. The performance task and scoring rubrics were validated by curriculum experts, assessment experts and master geography teachers. The result shows a high content validity. Finally, in phase three the alternative assessment instruments were field trialed to determine their face validity as well as their constrcut validity and reliability. The instruments are found to have acceptable psychometric value which support their trustworthiness. Inter-rater reliability is also reasonably high.

1.0 INTRODUCTION

There are three main types of assessment employed in Malaysian schools today. The first is the diagnostic test which is carried out at the beginning of the year to gather a baseline for the level of students' skills in certain areas (Gurnam Kaur Sidhu, Chan Yuen Fook, Zainab Mohd Noor, Teoh Chee Yong & Norshiha Sidin, 2007). The information gathered is used

to modify a programme. Secondly, formative assessment, which is conducted continually throughout the year and is used to monitor students' understanding. It gives immediate feedback and guides the teacher in modifying instruction to meet the needs of the students. Thirdly, summative assessment, which takes place at the end of a unit or a lesson, evaluates if the student has mastered the learning objectives or outcomes. Geography coursework is a blend of formative and summative assessment where students are given the opportunity to improve their work in sixteen geography lessons (Chan Yuen Fook & Paramjit Singh, 2006; Chan Yuen Fook, Chee Yong Teoh, Gurnam Kaur a/p Gurdial Singh, Paramjit Singh, Fatin Aliana Mohd Radzi & Md. Rizal Md Yunus, 2007). It is a high stake standardised test which is prepared by the Examination Syndicate and administered as a school-based assessment.

2.0 STATEMENT OF PROBLEM

Coursework is an assessment tool to gather evidence on students' research skills (Bhasah Abu Bakar, 2000). The assessment instruments consist of a task and a task-specific rubric. It presents a task that relates subject matter to the complex world we live in. Real-world tasks require planning, problem solving and other skills which are frequently performed under ambiguous or changing conditions (Broomhead, 2005). Students are to investigate a geography issue by collecting data in fieldwork activities on contemporary geographical problems in schools or their neighborhood (LPM, 2005a). However there are some weaknesses in the scoring tool and this resulted in inconsistency of raters in scoring students' research report. Geography teachers who marked the students' report were not clear of the construct to be assessed (Chan Yuen Fook *et al*., 2006), therefore the scoring procedure was not standardized from one school to another (Mohd Zohir Ahmad, Mohd Daud Hamzah & Shuki Osman 2002). Halo effect and logical error (Linn & Gronlund 2000) in scoring occurred in the process of marking the students' research report (Mohd Zohir Ahmad et al. 2002). Secondly, the task-specific rubrics did not help students to complete the task (Chan Yuen Fook et al. 2006) and task -specific rubrics cannot be shown to students a head of time because it gives away the answers (Arter & McTighe 2001). Therefore, the validity of the score is questionable **(**Haslina Hanapi 2003). It is important to have a systematic scoring rubric to assess students' research skill and apply the criteria to evaluate the students' ability (Arter & McTighe 2001). Central to the construct validity of alternative assessment is the rating scale used in the assessment procedure (Norlide Kassim 2007). The rating scale should have clear scoring criteria but not giving away the answers A fair assessment is one in which it is clear what will and will not be tested. Both the performance task and the scoring criteria should be clear (Herman, Aschbacher & Winters 1993; Marzano, Pickering & McTighe 1993; McMillan 1999; Wiggins 1990) in order for students to know what to study and focus on. There is nothing more frustrating for a student than to receive a project assignment with little or no description of how it will be graded (Loveland 2005). By knowing the scoring criteria, students will understand the qualitative differences the task is looking for (McMillan 1999) and teachers will be consistent in scoring. This is also stressed by the Minister of Education, noting that a reform in assessment is a necessary step in Malaysia's plans to reform education and advocated the development of a reliable decentralised school-based assessment system to complement the present centralised assessment system (Hishammuddin Tun Hussein, 2005).

This call is being answered in this research. Clearly defined performance criteria helps to clarify instructional goals and assist in reducing subjectivity in scoring. This will assure the validity and reliability of the test. In addition, the analytic scoring rubrics promote

alternative assessment strategies to facilitate the opportunity for capturing the more qualitative aspects of meaningful and enduring learning (Halonen, Bosack, Clay & McCarty 2003). Since alternative assessment consist of two components, both performance task and scoring rubrics were developed for this research.

3.0 RESEARCH OBJECTIVES

i. To reconceptualise the construct 'Ability to conduct a research' of the lower secondary school geography.
ii. To develop a model of a task template that can generate alternative assessment task for geography.
iii. To develop scoring rubrics for the construct 'Ability to conduct a research'.

4.0 CONCEPTUAL FRAMEWORK OF THE RESEARCH

A conceptual framework is needed in order to conduct this research. First, the construct 'Ability to conduct a research' needs to be reconceptualised. This will validate the constructs to be assessed and contribute to the content validity and construct validity of the performance task generated from the task template and the scoring rubrics. The reconceptualised construct will be based on the model by Lembaga Peperiksaan (2005a) and Kementerian Pendidikan Malaysia (2001a & 2001b). Then three components are needed to define an alternative assessment which will be based on the reconceptualised construct as shown in Figure 1: (a) a task template that poses steps to generate performance tasks that represent a real-life situation which is based on geographical research on which issues or problems are identified, ideally from student's own experiences in fieldwork. Students are then supported in the gathering of appropriate quantitative or qualitative data to answer their research objectives. The administration procedures and directions are also taken into consideration. The template then allows the researcher to develop performance task by using a shell or template that provides step-by-step instructions for generating assessment instrument. This template addresses five types of geography skills such as comprehension, synthesis, application, analysis and communication. To assemble a task, the item builder uses shell as templates that specify characteristics such as structure, format, style, and language that allow them to sample items over the universe of items forms.

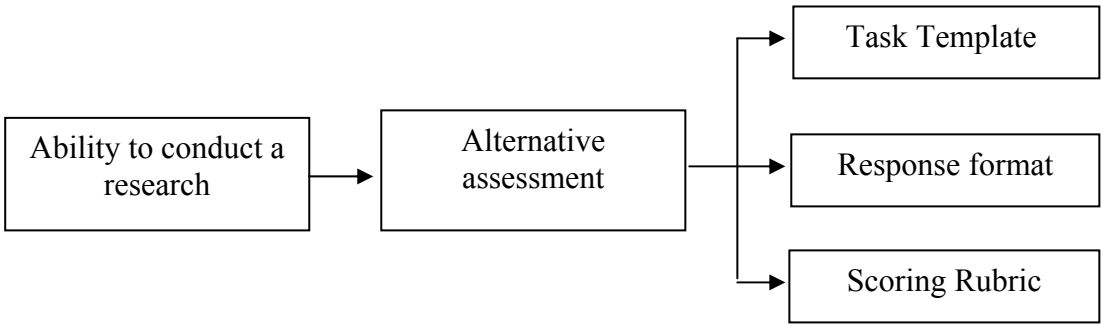

Figure 1 Conceptual framework of the research (Herman, Aschbacher and Winters 1992; Kementerian Pendidikan Malaysia 2001b; Lembaga Peperiksaan Malaysia 2005a; Marzano et al. 1993; Nitko 2004; Solano-Flores Shavelson & Schneider 2001)

Secondly, the students' findings are evaluated through (b) a response format. The type of response format from the students can be in the form of process or product in which the students' responses are captured for example record the procedures used to investigate an issue given, sketch a map, develop a graph or write a report. The response format was determined through the analysis from the in-depth interview of experts and also suggestion identified from document analysis (LPM 2005a; KPM 2001b).

Thirdly, a suitable scoring system to mark the student's responses about his and her geography research skill was determined. The task template also provides a way to link scoring rubrics to the task. The task directed students to identify problems, identify sources of problem, develop research objectives, identify and gather relevant information and offer explanations and interpretations of their findings and give their personal suggestions. The item builders matched the task to the scoring rubrics. Besides adopting shell to develop item, the process for developing the task and scoring rubrics was adapted by the steps suggested by Marzano et al. (1993). The scoring rubrics were developed based on the top-down approach suggested by Nitko (2004). Test specification was developed based on Chaterrji's (2003) test specification model and the table of test specification was developed based on Maizam Ismail's (2003) model.

The development of the alternative assessment components will be specified through an in-depth interview with experts. Interview protocols were developed based on Herman et al. (1993) specifications for alternative assessment which includes ;intended outcomes for the assessment, eligible topics, nature and format of questions to be posed to students, choices of response mode, scoring schemes and performance indicators and the administration procedures which include, group work or individual work, resources that will be available to students, directions given to students, time allowed to complete the task, how much help should be given and what directions should be given to students.

5.0 RESEARCH DESIGN AND RESEARCH METHODOLOGY

Mix method design was applied to develop the instruments (Creswell & Plano 2007). Qualitative (Creswell 2005) and quantitative methodologies (Gall, Gall and Borg 2003) were applied to collect information and to determine the alternative assessment instrument

validity and reliability. On the whole this research consists of three phases a) needs analysis (b) alternative assessment instrument development and (c) validity and reliability study. The development process is reiterative. Purposeful sampling in the qualitative methodology (Creswell & Plano 2007) was employed because this type of sampling can provide the necessary information. Nine subjects were selected based on their vast experience and knowledge in Geography, curriculum and teaching high school Geography, as suggested by Oosterhof (2003), the best experts are those teachers who have vast experience in teaching the subject in schools. Five subjects were interviewed individually and four as focus-group. In order to investigate the face validity, construct validity and inter-rater reliability of the alternative assessment instrument, a quantitative method (Gall, Gall and Borg 2003) was employed. The samples were selected based on the Malaysian Examination (LPM 2000) sampling method to pilot test its test items. Schools were selected based on school's location, school types and school achievements. The location of schools refers to urban, rural and suburban. The type of school refers to national secondary schools, national type secondary schools, single gender schools and religious schools. The school achievement is based on PMR result for Geography (LPM 2006, 2004, 2005b). 20 schools were selected for this study involving 36 Geography teachers and 1275 students. Prior to the preliminary tryout, the pilot test and the full operational test, a meeting was conducted with the schools that were selected. 36 teachers were trained to conduct this study. This was to ascertain that the assessment procedures were standardised in all schools. This research also applied 5 methods to maximize inter-rater reliability, and they are (a) use of explicit analytic scoring rubrics (Linn & Gronlund 2000; Popham 2002) (b) systematic scoring processes (Airasian 1997; McMillan 2004) (c) moderation of marking (Gronlund & Linn 1990) (d) training of markers (American Educational Research Association, American Psychological Association & National Council for Measurement in Education 1999) and (e) use of anchor scripts (Herman, Aschbacher & Winters 1993).A centralized marking session was held and conducted by two expert raters with 3 teachers for the Pilot study and 4 teachers for the full operational test to determine the reliability of the assessment instruments.

5.1 First Phase of the research - Needs Analysis

In the first phase of the test development an in-depth interview and document analysis were combined to identify the construct, population and purpose of assessment. Before the face-to-face interview was carried out, semi-structured interview protocols were developed. The content of the interview protocol was based on Herman et al. (1993) alternative assessment item development model which consists of the following themes :Construct to be assessed, suitable assessment mode ,performance indicator for the scoring rubric ,type of scoring rubric, response format ,eligible topics ,test duration ,test administration and resources that will be provided and available to students.

The findings from the in-depth interview and document analysis guided the development of the alternative assessment task template, performance task and scoring rubrics. The use of literature review for document analysis is important in order to complement the result of a qualitative method (Strauss & Corbin 1990). In order for the constructs to be valid curriculum document were referred to as suggested by Herman et al. (1993) and Nitko (2004). Learning outcomes were identified from these documents, because test content based on course objectives provided accurate information about individual or group achievement. The documents that were referred to for this research were the geography curriculum (KPM 2001a, 2001b, 2001c), geography assessment format (LPM 1994, 2001,

2002a, 2003b, 2005a) , geography textbook (Rafeah Ahmed, Khalijah Maimon, Aziah Ismail & Foo Ho Loke 2002) and assessment instruments from other assessment institution (Ministry of Education of Ontario 2007, 1998, 2002; National Geography Standard 1994; New South Wales Board of Studies 2003; New South Wales 2005; New Zealand Qualifications Authority 2007; The State of Queensland 2001; The State of Queensland 2007).

Face-to-face interview with individual experts and focus-group interview were carried out. The semi-structure interview protocols (Gall, Gall and Borg 2003) are organized around ordered but was flexible questioning. Interviewees were asked to reflect on their experience in implementing geography research in schools. The interview continued until the point of saturation was reached (Lindlof & Taylor 2005). The interviews were recorded, transcribed and analysed with NVivo by coding the themes that were identified. The transcriptions were sent to the same subjects and for the purpose of member checking to assure of its internal validity as suggested by Denzin and Lincoln (1994). Follow-up questions were asked by telephone when clarification was necessary.

The interview reports were studied intensively to identify common categories of meaning. The analysis of the transcription served to answer the research question. Using Glaser and Strauss (1967) method of constant comparison and Miles and Huberman (1994b) suggestions for analyzing qualitative data, common themes were identified and coded. First the transcriptions were read to obtain the overall flavour of the responses. The transcriptions were concurrently compared to the notes taken during the interview by a co-researcher. Third, the themes were reviewed to determine how they fit into the existing theory of the construct: 'Ability to conduct a research', that is stipulated in the curriculum documents. These procedures determined the validity of the result (Yin 1994) where interview reports were triangulated with other sources such as curriculum documents and Form Two textbooks. Matrix presentation (Miles & Huberman 1994a) of the findings was used to compare the results with the predetermined themes and the social science inquiry theory. When the matrix filled up, preliminary conclusions were drawn. During this step, two criteria (Patton 1990) were used: (a) Does the information confirmed with the current curriculum document and social science inquiry theory? (b) Does it offer new interpretation of the 'Ability to conduct research'?

This back and forth process, moving between the interview data, theory and literature led to the development of the alternative assessment task template and four analytic scoring rubrics. Content validation was carried out by employing: (a) Systematic analysis of the content via interview and document analysis (b) Qualitative judgment by the expert on the content of the test. The methods adopted in the study were to establish maximum content validity for the alternative assessment.

5.2 The Second Phase - Developing Test Instrument and Scoring Rubrics

The second phase of the alternative assessment development process was developing the test specification, table of test specification, alternative assessment task template, four analytic scoring rubrics and assessment guidelines. The assessment instrument was developed based on the following procedures:

5.2.1 Development of Test Specification and Table of Test Specification

The test specification was developed based on Chaterjji's (2003) model which consists of the following elements: Assessment purpose, population, construct, assessment method, scoring method, administration group or individual and assessor. After, the test specification was constructed a table of test specification was developed based on the Maizam Alias's (2003) model which consist of cognitive dimension and the topics to be included. The cognitive taxonomies applied for this research to developed the table of test specification were Bloom's Taxonomy (Nitko 2004) which consist of comprehension of geography concept, application of method, analyse information and synthesize information and Dimension of Learning Model (Marzano, Pickering & McTighe 1993) taxonomy for effective communication.

5.2.2 Development of Scoring Rubrics

The following factors were taken into consideration when developing the scoring rubrics; (a) avoid developing task specific rubrics (b) avoid developing excessively general rubrics (c) use teachable criteria and (d) use criteria that are measurable (Simkins 1999). This research adapted Mertler (2001) and Nitko (2004) suggestion in developing the scoring rubric. There are two ways of developing scoring rubric the top-down approach and bottom-up approach (Nitko 2004). This research adopted the top-down approach and guided by the test specification and task template to assure of its content and construct validity. Two major threats to validity of all measurement are construct irrelevant variance and construct under representation, in other words, assessments being too narrow or too broad (Messick 1994b). Thus the primary validation concern in the rubric development for this research was the extent to which the assessment may under represent the construct of interest while at the same time introducing measurement error through construct irrelevant variance. This was the basis for developing the analytic scoring rubrics to assess 4 constructs separately (Norlide Kassim, 2007) .Two psychometricians, a content expert, a curriculum expert and a master geography teacher evaluated the four analytic scoring rubrics.

5.2.3 Task Template as a Tool for Developing Performance Task

After the table of test specification was validated , a task template was developed to give a systematic item development procedure. It is a blue-print that allows test developers to systematically and efficiently generate items. The template used to develop the performance task is shown in Figure 2.

Four item writers who have 15 years experience in developing Geography test items and also specialist in subject matter developed the performance task based on the task template (Solano-Flores et al. 2001) by following the process suggested by Marzano et al (1993). The performance task was developed based on the 9-point system to address content validity and construct validity (Jamil Adimin 2003) and principles suggested by Linn et a. (2000), McMillan (2004), Moon, Callahan, Brighton and Tomlinson (2002). The principles that were taken into consideration by the four expert item writers were: the task should be interesting, has real-life issues, allowed multiple solutions ,minimum the irrelevant performance skills, structured, clear and fair. The panel of item writers also linked the performance task with the four analytic scoring rubrics and the task template.

Step1. Introduce the concepts that will be used in the assessment.
Step2. Provide a problem of social interest such as environmental issues.
Step3. Ask student to conduct a research to identify local contemporary geography problem.
Step4. Mention the skills to be assessed.
Step5. Ask student to present a complete written report for their research with a sketch map

Figure 2 Task template before expert evaluation

The procedures that were followed to develop the performance task are as follow: ascertained the constructs to be assessed, randomly selected a topic from the syllabus, apply the 9-point system (Jamil Adimin 2003) .The construct validity was determined by linking the task template, scoring rubrics and performance task in the development process by the expert item builders based on Ruiz Primo, Shavelson, Li & Schultz (2001) validation framework. In this step the item builders identified the cognitive demands. Test guidelines for students and teachers were also included in the test booklet. The assessment guidelines were developed based on Moskal (2003), Melber (2003), Lembaga Peperiksaan (2002a, 2005a) and Roeber (1996) test guidelines model .The guidelines were included as a component of the performance task because clear communication of students' responsibilities and requirement are also critical component of the task development (Moskal 2003). Guidelines for training and scoring were based on National Centre for Research on Evaluation, Standards and Student Testing scoring manual (CRESST 1996). The performance task was validated by an assessment expert , a curriculum expert, a content expert and a master geography teacher before the pilot test. The task template and performance task was amended after evaluation.

6.0 MODIFICATION OF THE EVALUTED ITEM

After the experts evaluated the performance task four item writers modified the task template as shown in Figure 3. This was done because a modified template was needed to modify the performance task. The same procedures were followed to amend the performance task. The performance task was also evaluated on its content validity by referring to the task template and scoring rubrics.

Step 1. Introduce the concepts that will be used in the assessment.
Step 2. Provide a problem of social interest such as environmental issues.
Step 3. Ask student to conduct a research to identify: (a) the concept, (b) local contemporary geography problem (c) sources of problem (d) and provide suggestions to reduce the problem.
Step 4. Ask student to write a research report which includes a sketch map and a graph
Step 5. Give guidance to students how to conduct the investigation.
Step 6. Mention the skills to be assessed.
Step 7. Mention the duration of time to complete the research.

Figure 3 Task templates after experts' evaluation

The performance task was evaluated for the second time by a psychometrician, content expert, curriculum expert and a master geography teacher through logical analysis. All agreed that the sub-tasks fit the cognitive demand to be assessed.

6.1 Findings

6.1.2 Results of the Preliminary Tryout

After the performance task was evaluated by the experts it was later evaluated by four teachers from three different schools from different location. The performance task was evaluated based on the 9 point system (Jamil Adimin 2003) on its suitability, clarity and fairness. All of the teachers agreed that the topic is suitable to all location, fair to all students and clear.

6.1.2 Face Validity

The results from the pilot test and the full operational test show that the test is fairly a valid instrument in terms of face validity. Among others, the teachers and students have high level of understanding towards the performance task, scoring criteria and test guidelines. Table 1 and 2 shows the result of the study. According to Azhar (2006) in Noorasmah (2001), this shows an average high response towards the test, therefore it can be concluded that both teachers and students accept the test.

Table 1
Mean Value of Teacher's Reaction to The Full Operational Test

	Mean value
Performance task	4.10
Scoring rubrics	4.04
Teacher's assessment guidelines	3.89
Students' assessment guidelines	3.83
Task Direction	3.95

Table 2
Students' Reaction to The Pilot Test and Full Operational Test

	Pilot test Mean Value	**Full operational test Mean value**
Performance task	3.86	3.90
Scoring Rubrics	3.62	3.78
Students' assessment guidelines	3.91	3.90

6.1.3 Construct validity

Besides performing logical analysis to validate the performance task, empirical evidence should also be sought (Chaterjji, 2003; Ruiz-Primo et al., 2001). The method used to investigate the construct validity in this study is the testing of a hypothesized measurement model through confirmatory factor analysis (CAF). CFA elucidates the need for rigorous empirical validation on construct validity (Hair, Anderson, Tatham and Black 2006; Norlide 2005). CFA is used to provide a confirmatory test of a measurement theory. The

measurement model was then evaluated by confirmatory factor analysis in Structural Equation Modeling using AMOS (Arbukcle and Wothke, 1989), a model fitting program.

In order to analyze the simultaneous relationships between influences factors, the Structural Equation Model is applied .In this model, strategy is measured by 'Ability to investigate', 'Ability to sketch a map', 'Ability to develop a graph' and 'Ability to write a research report'. The first step of analysis shows that sample covariance matrices was different with estimated covariance matrix (Chi-square = 398.275, probability level .00<.05). The result is shown in Table 3.

Table 3
Computation of degrees of freedom (Default model)

Number of distinct sample moments:	91
Number of distinct parameters to be estimated:	29
Degrees of freedom (10 - 8):	62

Result (Default model)
Minimum was achieved
Chi-square = 398.275
Degrees of freedom = 62
Probability level = .000

The initial model was tested resulting in insignificant coefficients that suggest a lack of support for this specification of the model. The finding shows the result of good fit-index and recommended values. The results suggest that the model did not fit the data adequately and shown in Table 4. The GFI, AGFI, and TLI values do not meet the recommended values. On the other hand, the fitness of the model was contaminated with all recommended model fit. Therefore, Arbuckle (2007) and Hair, et.al (2006) suggested re-specifying the model in the second steps of analysis and shown in Figure 4.

Table 4
The analysis result before re-specification

	Hair et al	**Initial**	**Conclusion**
GFI	≥ 0.900	0.846	Inacceptable
CFI	≥ 0.900	0.910	Fit
AGFI	≥ 0.900	0.773	Inacceptable
TLI	≥ 0.900	0.886	Inacceptable
RMSEA	≤ 0.08	0.130	Inacceptable

The findings of second steps of SEM model indicate that Chi-square value is 158.920 with 57 degrees of freedom and p-value of 0.000<.05 as shown in Table 5. This do not supports the null hypothesis that the revised model has a good fit. Since, this research involved a big sample size, the violation of normality will not give a significant effect to the result of analysis, therefore the analysis can be continued (Hair, et. al, 2006; and Arbukcle 2007).

Table 5
Computation of degrees of freedom (Default model) after respecification

Number of distinct sample moments:	91
Number of distinct parameters to be estimated:	34
Degrees of freedom (91 - 34):	57

Result (Default model
Minimum was achieved
Chi-square = 158.920
Degrees of freedom = 57
Probability level = .000

The second steps of structural model was analyzed based on the modified measurement model (confirmatory factor analysis) using the maximum likelihood estimation method. Base on the result at the initial analysis, the goodness-of-fit indexes are shown in Table 6, which illustrated that the four-dimension structure demonstrated good fit. The tucker lewis index (TLI), goodness fit index (GFI), adjusted goodness fit index (AGFI), comparative fit index (CFI), and root mean of squared error approximate (RMSEA) were 0.886, 0.846, 0.773, 0.910 and 0.130. Respectively, several of these goodness-of-fit index values cannot met the recommended cut-off values in the literature that is, p-value $\geq$ 0.05, TLI $\geq$ 0.90, CFI $\geq$ 0.90, GFI $\geq$ 0.90, AGFI $\geq$ 0.90 and RMSEA $\leq$ 0.08 (Hair et al. 2006). Based on these indexes, we concluded that the overall fit of the four-dimension model was not acceptable.

To get fit model, this model must be modify or re-specify. The modified model fits the data adequately, the four-dimension structure demonstrated good fit. According to Hair et al (2006) typically using three to four fit indices provides adequate evidence of model fit. While, Arbuckle and Wothke (1995-2006) suggest that a value of 0.90 or greater for both CFI and TLI indicates a reasonable fit of the data with a model and an RMSEA value of about 0.08 or lower, but certainly no greater than 0.10 indices is an acceptable error rate for a model. Accordingly, a model that meets all three criteria is considered to have an acceptable fit. The result of the analysis saw that chi-square value was not significant, with a value of 158.92 and p-value of 0.00, The tucker lewis index (TLI), goodness fit index (GFI), adjusted goodness fit index (AGFI), comparative fit index (CFI), and root mean of squared error approximate (RMSEA) were 0.963, 0932, 0.891, 0.973 and 0.740. Even AGFI value is less than 0.900 and CMIN/DF exceed 2.0, the value still acceptable value because the AGFI value between 0.85-0.90 and CMIN/DF below than 3 (Schermelleh & Moosbrugger 2003). Based on the result, we concluded that the overall fit of the four-dimension model was acceptable.

Table 6
The Analysis Result

	Hair et al	Initial	Modified	Conclusion
GFI	≥ 0.900	0.846	0.932	Fit
CFI	≥ 0.900	0.910	0.973	Fit
AGFI	≥ 0.900	0.773	0.891	Acceptable
TLI	≥ 0.900	0.886	0.963	Fit
RMSEA	≤ 0.08	0.130	0.740	Fit

The loadings of the overall construct of 'Research' on the main construct for 'Investigate' (loading = .723, sig.=.000) has the highest contribution towards research and it is followed by 'Write a report' (loading = .671, sig.=.000), 'Sketch map' (loading=.498, sig.=.000) and 'Develop a graph' (loading=.035 sig.= >.05). Factor loadings for every indicators upon it's' construct shows accepted and good loading value >.400 (Hair, et. al, 2006; Pallant, 2007)). Indicator Invest3 yielded .42 factor loadings to 'Investigate', invest2 yielded .985 and invest1 yielded .935. Indicator map3 yielded .590 factor loadings to 'Sketch a map', map2 yielded .973 and Map1 yielded .887 on construct 'Sketch map'. Indicator Graft 4 loads .482, graft2 .991, graft1 .994 to 'Develop a Graph' Indicator Rep3 loads .535, Rep2 loads .987 and indicator Rep1 loads .930 to construct 'Write a report'.

The reliability analysis was conducted by calculating the Cronbach's alpha for the main constructs. Items that did not significantly contribute to the reliability were eliminated for parsimony purpose. The result shows that the Cronbach's alpha measures for construct Investigate, Sketch Map, Develop a Graph and Write a Report exceed the threshold point of 0.70 as suggested by (Hair, et. 2006; Pallant, 2007). The Alpha coefficients for overall are 0.861.

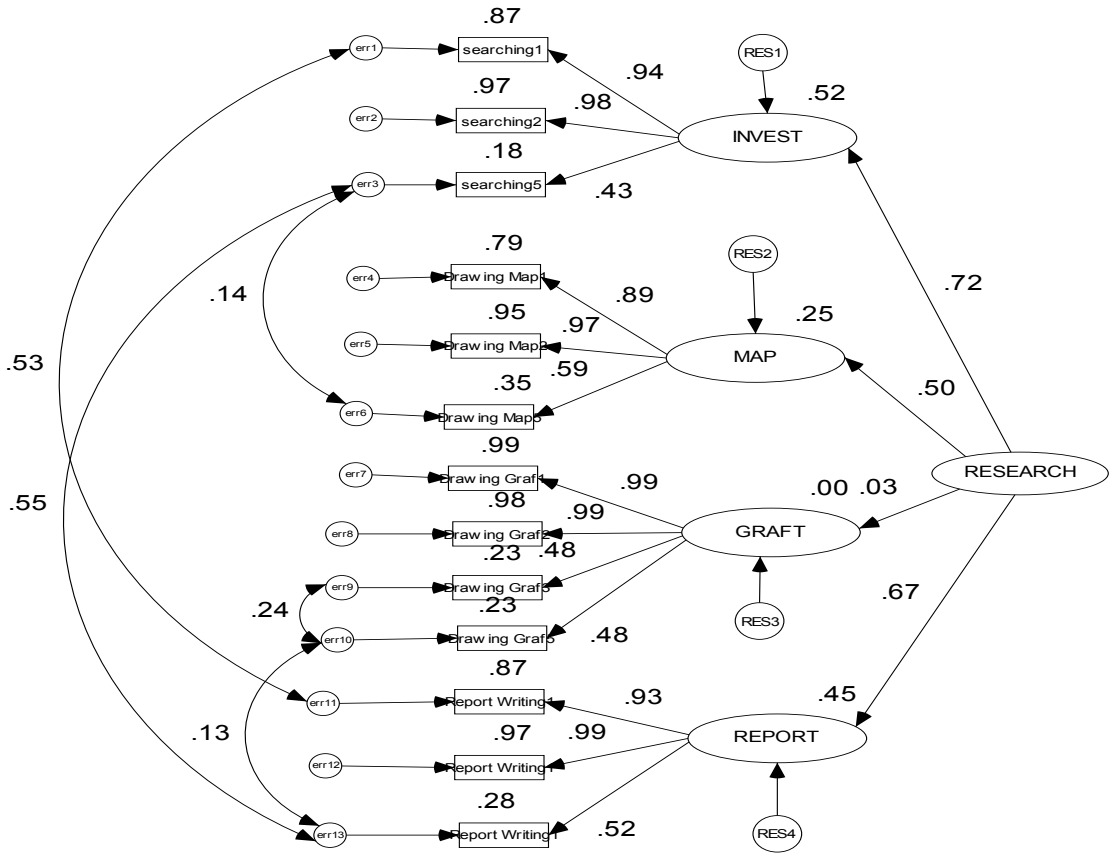

Figure 4 Path diagram of modified model

6.1.4 Inter-rater Reliability

The inter-rater reliability among raters has improved when compared to the pilot test. Table 8 shows the result (alpha value) of both of the test for each sub-construct. This can be concluded that the raters understood the scoring criteria for each construct and can interpret it when marking the students' research report.

Table 8
Inter-rater Reliability (alpha value)

Construct	Pilot test	Full Operational test
Investigate	.810	.816
Sketch a map	.748	.834
Develop a graph	.808	.813
Write research report	.676	.779

The raters also commented on the usability of the scoring rubrics. They found that the four analytic scoring rubrics contributed to the ease of scoring because the criteria are interpretable. The raters also felt that the performance task focus on local geography investigation, in contrast to the current performance task for the PMR examination which requires students to compare local geography to other parts of the world.

7.0 DISCUSSION

The development of the task template, scoring rubrics and performance task are in dynamic interaction. Any changes to the task template resulted in changes in the performance task and scoring rubrics and vice versa. This was also discussed by Solano-Flores et al (1990), Solano-Flores et al. (1999) and Solano-Flores (2001). Secondly, there was also tension in to align the task, template and scoring rubrics experienced by the expert item builders of this research. The template acts as a tool that regulates the cyclical process of assessment development. In each iteration process, the item builders discussed and negotiated any changes made to the performance task, response format and scoring rubrics. The item builders were also careful not to give away the answers by providing more instructions to the students. However, although there were difficulty to align the task to the template and the scoring rubrics, the item builders managed to attain performance task that has proper alignment with the four scoring rubrics content. This is to assure content validity. The process of item development posed considerable demands on the item builders and the researcher. The researcher finds that alternative assessment instrument is a delicate tool to develop.

Solano-Flores et al. (2001) realize that the task template must be very precise in order for the item builders to develop a task. This is to assure that the task developed is psychometrically sound and taken into consideration by this research. The task template that was developed was based on the reconceptualised construct from the first phase of the research. To ensure standardization and clarity of the performance task, the task template contains of eight steps which starts with the introduction of the concepts, followed by the issue to be investigated, research task, the type of response expected, guidance to conduct the research, skills to be assessed, the duration of time to complete the task and the required format to write the research report. Based on all the necessary steps, an acceptable level of validity was achieved.

The results from both of the test are positive and according to Solano and Shavelson (1999) an assessment is ready to be used under the following condition: (a) student understand properly what the task is about (b) the instrument reacts to the students' actions as expected (c) the students' responses captured by the response format reflect the targeted knowledge and skills (d) a wide variety of responses with varying degree of accuracy are observed (e) further changes to the task, response format or scoring system are minimal and (f) all students responses can be characterized by the scoring system. These conditions were met by the performance task and scoring system. However, some improvement should be made to the scoring rubrics of the 'Ability to sketch a map' and 'Ability to develop a graph' because both has low factor loading. On the other hand, evidences gathered through the questionnaire distributed to the teachers, students and raters support the face validity of the test. Students understand the task. Students also reacted to the test by conducting the research. The students' response format reflected the target knowledge and skills. Next, a wide variety of responses with varying degrees of accuracy were observed by the raters. Finally, according to the raters, students' responses can be characterized by the scoring system with ease.

8.0 CONCLUSION

These findings contributed significantly to the geography assessment of this country. Since alternative assessment is delicate and time consuming to develop, the template developed from this research can potentially be used to generate parallel assessment forms for large-scale test. The template provides a departure point for the Malaysian Examination and teachers to construct performance task that is valid and reliable. In addition, geography education is also facing a problem in school today because most of the teachers who teach geography are not trained to teach Geography. This will be a valuable tool for these teachers to aid them in assessing the construct and give consistent scoring to the product.

Secondly, the cost of developing alternative assessment is high, this template can be a model to generate many performance tasks with different geography issues that are contemporary and adaptable to the local context of the schools in different locations. The template also provides a way to link scoring to the task performed by the students. This template will saves development time and cost. In addition it forms the basis and technology for constructing template for other task types. In conclusion, the model and tools produced by this research are: (a) research skills for geography of the Lower Secondary School (b) alternative assessment task template and (c) four analytic scoring rubrics that matches the sub constructs of the research skills.

This study is one of the first through attempts at designing, constructing and validating an alternative assessment instrument for Lower Secondary School Geography in Malaysia. Although, there may be some limitations, the study has provided empirical evidence about the performance of the assessment instrument and the four analytic scoring rubrics. The satisfactory level of reliability and validity evidence gathered has proven that this is reasonably a good test. The procedures used in the process of developing the alternative assessment task could be a reference for the education institution such as schools and institution of higher learning to develop their assessment instruments since the procedures to develop alternative assessment is not fully documented and explored. Lastly, this study has provided a significant contribution to Geography education and will inspire other social science subjects to develop alternative assessment instrument with well-defined standards and clear scoring criteria as has been inspired by the Ministry of Education.

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International Cooperation Strategies on Higher Education

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Abstract

The *study of international cooperation strategies in higher education is synthesized by using in-depth interview and brainstorming ideas from target groups including experts, executives of public and private universities, other executives in related field, foreign students studying in Thailand, Thai students studying overseas, and lecturers in an exchange program. The higher education policy and the country development plan are also analyzed to examine the possibilities of higher education cooperation within bilateral and multilateral contexts. The cooperation strategies in higher education between Thailand and other countries are as follows.*

The international cooperation strategies in higher education: macro perspectives aim to strengthen and to increase the efficacy of Thai higher education so as to become a hub of Education in regional level and international level, which result in the growth of educational business and the source of incomes: 1) Thailand would become a hub of higher education in the Greater Mekong Sub-region (GMS) next 10 years (2007-2016); 2) Thailand would become a regional hub of higher education in ASEAN next 20 years (2007-2026); 3) Thailand would be able to earn 8,000 million baht in higher educational business next 20 years (2026).

In order to achieve this goal, the important strategies are improving the qualities of Thai higher education, supporting higher education cooperation reaching international standard, facilitating regulations for international cooperation and development, advertising Thai higher education for better international cooperation, and enhancing higher educational market in Thailand. Moreover, the cooperation strategies of higher education at bilateral level, multilateral level and international level should be included for example, the cooperation strategies between Thailand and Southeast Asia Region, the cooperation strategies between Thailand and East Asia Region, the cooperation strategies between Thailand and Asia Pacific Region, the cooperation strategies between Thailand and North America, the cooperation strategies between Thailand and Europe, the cooperation strategies between Thailand and South Asia, the cooperation strategies between Thailand and Middle East, the cooperation between Thailand and South America, and the higher education cooperation within multilateral level and international organization.

Statement of the Problem

Globalization has a great impact on the development of Thai higher education. To follow such movement and create competitive ability to Thai universities, the 9th Plan of educational development in higher education level (1992-1996) established the goal of increasing the capability of higher education institutes to be able to depend on Thai wisdom and create learning society. The plan aims to develop Thai Higher Education Institutes to be the brain of the country being able to compete in modern economic system and improve standards and qualities of higher education to international level.

One way to achieve the established goal is creating cooperation with other countries to exchange academic knowledge and learn from each other. However, many countries in the world have diversities in developing level, economic level, and level of advancement in research, technology, and human capital. Apart from these diversities, there is also a variety of culture, society, politics, and geography. Besides, the movement in world trade platform in services, marshalling of countries in regional level, between regions, and in international level become complicated factors which should be carefully considered for international cooperation.

To promote international cooperation for the greatest benefit of the country development, Office of the Higher Education Commission realizes the necessity to have strategies for promoting international higher education. The strategies shall serve as guidelines for increasing the effectiveness of international cooperation and respond to the needs of higher education institutes and the direction of country development.

Research Objectives

5.1 To propose international cooperation strategies on higher education. The strategies shall pursue the goal of Thai higher education and government policy.
5.2 To propose overall cooperation strategies on higher education and regional level and define roles of the government, Office of the Higher Education Commission, and Higher Education Institutes in implementing the strategies.
5.3 To propose practical cooperation strategies on higher education. The outcome of the strategies shall be affected in both short and long terms.

Scope of Study

6.1 Study the government policy on the relationship and cooperation with foreign countries.
6.2 Study the educational cooperation between Thai organizations and foreign countries.
6.3 Study the international cooperation of the Office of the Higher Education Commission and Higher Education Institutes in Thailand both in bilateral and multilateral level
6.4 Study the international cooperation of the higher education institutes in other countries in order to learn from lessons and experiences.
6.5 Study and analyze impacts of the implementation of the international cooperation between the Office of the Higher Education Commission and Higher Education Institutes.

Research Methodology

7.1 Study from secondary sources by studying/collecting information which relates to or affects international higher education cooperation. The information includes the government policy on foreign affairs, international cooperative policy on higher education, cooperative framework of international higher education both in bilateral and multilateral level, and higher education environment of Thailand and other countries.
7.2 Study from primary sources.

1) Study and collect the information from interview and focus group.
2) Brainstorm and listen to the opinions of experts, executives of public and private higher education institutes, and executives of related organizations.
3) Collect the information of higher education cooperation from higher education institutes and organizations in foreign countries, lessons relating to cooperation with foreign countries, and focus groups including foreign students studying in Thailand and Thai students studying aboard.
4) Marshal specialists and experts to collaboratively analyze advantages, disadvantages, strengths, and opportunities of Thai higher education cooperation between Thailand and foreign countries.

Conclusion and Discussion

According to the study and analysis of the policies including higher education policy and overall linking policy on the country development, problems and necessities to develop Thai higher education to achieve international standards, and opportunities from higher education cooperative platforms both in regional level and in the context of bilateral and multilateral cooperation, the conclusions could be made as follows:

Policy and Situation of International Higher Education Cooperation

The 9th Plan of National Economic and Social Development (1992-1996) gave priority to the adjustment in economic structure for balance and sustainability by focusing on the development of Science and Technology, the increase of potential and competitive ability level, and the enhancement of social foundation. It is emphasized that personnel development and social protection in cooperation with structural adjustment for sustainable development of rural and urban areas as well as natural resources and environmental management is essential.

For educational development of the country under such plan of national economic and social development, reform of educational system is planned in accordance with economic and social change. Encouraging a life-long learning process to support a knowledge foundation is a rationale of proposing strategies of educational reform. The goal of higher education reform is that university is a source of producing qualified scholars who meet the requirement of economic and social development of the country. Furthermore, university is also an academic source of producing the body of knowledge which is important for developing knowledge-based society in economic and social development of that country.

Frameworks to pursue Ministry of Education's policy on foreign affairs are as follows: 1) Implement the agreements made between the government and other countries to have an effect in practice. 2) Promote the exchange of knowledge and experience with many countries. The exchange could be in form of seminars, collaborative projects, staff

exchange programs, and communication via modern information technology systems. 3) Use education as an important strategic tool for creating understanding and international cooperation especially in regional level. 4) Support Thailand to be an educational center in the fields which the natives are specialized or the fields pursuing the strategies of developing the country to become a leader, such as Medicine, Tourism, Aviation, and etc. 5) Use potentials of Thai academics in other countries to build an academic cooperative network with other academics in those countries. 6) Support Thai students to study overseas in the programs which are needy and necessary.

Situation of Thai Higher Education

According to the Economic and Social Development Committee's (1992-1996) evaluation of developing result during a half period of the 9th Plan, in overall image, it is found that although economic has fully recovered from the crisis in the 8th Plan, the development of economic system, society, and the environment still lacks balance especially people development issue. People development is not enough. Human resources are not highly skillful. Production section is capital intensive, and learning society is not widely promoted.

For the crucial problems of Thai higher education, Thai higher education currently encounters some problems relating to the preparation for increasing the capability to international competition. Those problems are: 1) Fundamental education is not strong enough, especially in the field of Science, Mathematics, and English. 2) Overall direction of Higher Education development is not clear. Coordination is not fully facilitated. There is still an overlap in providing services. The interest in quality development is not strong enough. 3) For higher education problem, the university council, institute, and faculty level could not adjust themselves to the rapid change especially the quality development of instruction and research standards.

Analysis of the opportunities to seek for higher education cooperation in regional-leveled platform

This study investigates the cooperation both in regional level and in the context of bilateral and multilateral cooperation. The regional level covers eight regions including Southeast Asia, East Asia, Pacific, North America, Europe, South Asia, Middle East, and South America. However, only Southeast Asia region would be presented here.

According to the analysis of the opportunities to seek higher education cooperation in the Southeast Asia region platform, the "Association of South-East Asian Nation: ASEAN, the group members could be classified into two small groups, which Thailand has an opportunity to set different initiations or emphasis of seeking for cooperation. The old ASEAN members are Singapore, Malaysia, Philippines, Indonesia, and Thailand whose development level is similar. However, Singapore and Malaysia are more advanced than Thailand in many aspects especially education. The new ASEAN members or the Greater Mekong Sub-region are Cambodia, Laos, Burma, and Vietnam whose development level is lower than Thailand. Thailand plays a role of help provider for both academic and finances especially higher education support. Thailand continually offers scholarship to students from countries in this group to study in Thailand.

International Cooperation Strategies on Higher Education

From synthesizing policies in association with interview, focus group, and brainstorming with related person provides guidance to propose three main international cooperation strategies on higher education. Those are: 1) Overall international cooperation strategies on higher education. 2) Cooperation strategies on Thai higher education with foreign countries in regional level. 3) Cooperation strategies on higher education in multilateral platform and international organizations.

1) Overall International Cooperation Strategies on Higher Education

Strategic Framework

To strengthen and increase the capability of Thai higher education for being a regional center of higher education and gaining international acceptance so that educational business becomes an important source of revenue.

In order to achieve such framework, it is necessary to follow three strategies: 1) Thailand becomes a higher educational center of the Greater Mekong Sub-region (GMS) within 10 years (2007-2016). 2) Thailand becomes a higher educational center of ASEAN Region within 20 years (1007-2026). 3) Thailand receives income from higher educational business not less than 8,000 million baht per year within 20 years (2026).

Strategies for the cooperation strategy implementation are as follows:

- **Increase the capability of Thai Universities**

  Improve the quality of curriculum and instruction. Prioritize and seek for the cooperation in development of curriculum which is important for country development. Continually motivate and support curriculum and instruction development in higher education institutes.

  Develop educational staff. Provide training programs, scholarship, and personnel exchange programs in the fields which relate to the need of the country. Support research in order to develop the researching capabilities, create expertise in particular field as well as exchange educational staff and higher educational resources consistent with commercial agreement of educational services.

  Promote the cooperation in research and apply the research result into practice. Support to do research that responds the needs of business and industrial sectors and relates to country development policy. Encourage higher education institutes to join hands with business and industrial sectors in conducting further research. Stimulate technological transfer process from research into practice. Additionally, it is necessary to accelerate and enhance the effectiveness of conducting research in network pattern to connect with famous research organization in foreign countries and urge on managing intellectual property resulted for collaborative research.

  Seek for other resources to support the potential development of Thai higher education by offering benefits to the private sectors which support resources and seeking for the support from the international cooperative organization by means of resource exchange to strengthen higher education institutes.

Strengthen the cooperative network between higher education institutes (Consortium) in various fields by continually supporting academic activities. Set the direction of network to support country development. Stimulate the establishment of cooperative network of higher education institutes in more various fields. Create both national and international network of curriculum development, credit transfer, and exchange program for students, teachers, and researchers.

Develop Educational Quality Assurance System to gain the concrete acceptance for educational standards between Thai international universities.

Rank Thai Higher Education Institutes. Set up ranking systems, determine acceptable indicators of public and private university ranking, carry out the evaluation for ranking, and publicize the information of Thai university ranking.

- **Promote the cooperation to improve Thai Higher Education Standards to international level.**
  Building a model for establishing international cooperation by building up the strengths of existing Center of Excellence in order to be a model of establishing Excellent Center in other aspects, and seeking for cooperation with international higher education institutes in the fields which Thai Higher Education Institutes are in a state of preparedness.

  Cooperating to develop e-learning standards and virtual university. Promote the cooperation between Thai and international higher education institutes to create classrooms via electronic media and e-learning system. Initiate a project of standard virtual university establishment to get Thailand ready for Cross Border education under the quality control of instruction and evaluation of authorized organizations.

- **Conduct the proactive cooperation in establishing cooperation with foreign countries.**
  Learn deeply about the countries by forming the team of educational experts who profoundly understand the economic and social status of the target countries. Estimate their needs in higher education and responsive capability of Thai Higher Education Institutes, and establish information center for creating the international cooperation on higher education.

  Strengthen relationship with existing alliances and create relationship with new alliances. Encourage higher education institutes to do activities according to agreement made with foreign countries. Establish an organization for international education services, appoint marketing representative of Thai higher education in star network in target markets, and encourage Thai Higher Education Institutes to do activities with higher education institutes of the target countries.

- **Revise rules and regulations to allow the development of international cooperation.**
  Revise related rules and regulations. Study rules and regulations which cause problems so that the relevant organizations can revise such rules and regulations. Use legal policy to decrease impacts from the educational freedom of Thai Higher Education Institutes. Facilitate visa permit procedure for foreign

students. Consider relaxing some rules for the foreign students so that they can work to broaden experience while studying.

- **Create specific knowledge to attract new clients**

  Develop the body of knowledge which points out Thai identity and wisdom by building the body of knowledge that reflects Thai identity and wisdom to achieve international standards. Publicize them to gain domestic and international acceptance.

  Develop universal body of knowledge by supporting research to create the body of knowledge and building expertise in particular field.
  Use the prominent feature of Thai art and culture as well as natural resources to promote cooperation. Publicize Thai art and culture as well as resources of tourism to other countries. Promote the meeting of Thai people in other countries for doing activities to publicize Thai art and culture.

- **Build up a market for Thai higher educational business.**
  Create a market opportunity for Thai Higher Education Institutes by studying the need of manpower in higher educational level of Thailand and target countries, and collecting the information regarding the distinguished academic points of Thailand such as food and beverage, medicine, Thai traditional medicine, agriculture, Thai music, and Thai art and culture, in order to publicize and set up a marketing mechanism for strengthening the relationship and expanding the cooperation.

2. Cooperation Strategies on Thai Higher Education with Foreign Countries in Regional level: Cooperation Strategies with Southeast Asian Region

Strategic Framework

Since Southeast Asian countries have closed relationship with Thailand in race, history, and culture. It is appropriate to give priority to Southeast Asian Region. The role of higher educational cooperation should response to ASEAN Declaration of Unity and supports the policy of Thailand as a regional center with emphasis on social and economic security of this region.

Strategies for the cooperation strategy implementation are as follows:

- **Prepare for the Declaration of Unity among ASEAN nations.**
  Set the method of adjustment of Higher Education Institutes for the unity of ASEAN by brainstorming to set the guidance and plan the adjustment of Thai Higher Education Institutes. Set working plans which follow the guidance of the adjustment of Thai Higher Education Institutes, make an agreement among members to set a collaborative guidance, and pursue the agreement framework established together.

- **Revise Higher Education rules and regulations which can be enforced by membership countries.**
  Revise rules and regulations which cause problems for cooperation.

- **Form a team of experts in higher education to create cooperation in ASEAN region**

Form the team of experts in Higher Education for discussion in the Collaborative platform by marshalling experts in related fields and clearly appointing a responsible person in order to form a team of experts on ASEAN higher education. ASEAN would coordinate with related organizations to gain the information of overall movement of ASEAN group members. Collect, present, and connect the information from different sources for using together.

- **Build up strength by using ASEAN academic feature in order to promote cooperation from foreign countries.**
  Use existing organizations and ASEAN academic network for the benefit of establishing cooperation with foreign countries outside ASEAN by establishing cooperation with the non-ASEAN countries via specialized centers of SEMEO/GMS/ACMAC and supporting AUN to create academic strengths to member nations. Create new non-ASEAN alliances to support ASEAN activities by giving them the opportunity of participation.

- **Create the market opportunity for Thai higher educational business by allowing ASEAN countries to be clients.**
  Use marketing strategy to support Thai educational business by establishing centers for publicizing Thailand's educational services in all regions and using Thai identity, environment, and nature to enhance the strength of Thai higher education.

  Adopt UMAP/AUN method to create international credit transfer system in ASEAN region by setting criteria for credit transfer among ASEAN countries and publicizing these criteria to the teachers and students.

- **Create the cooperation under partnership and equivalent prestige among CLMV countries.**
  Adjust the assistance among CLMV countries into an interchangeable cooperation by studying strengths of CLMV countries to establish the appropriate exchange cooperation.

- **Create the market opportunity for Thai educational business and build up a market of Thai Higher Education in CLMV countries.**
  Use the existing fundamental structure to create an opportunity for Thai higher education by providing educational services to CLMV students along the border of Thailand, establishing educational service centers so that the students from CLMV countries can come to study and return home, facilitating border transportation services to the students studying in Thailand, making educational investment in CLMV countries by introducing curricula and establishing campus together.

- **Encourage Thai students and Thai Higher Education Institutes to pay more attention to CLMV countries.**
  Build up the strength of centers which study Thailand's neighboring countries by encouraging the centers that study the neighboring countries to regularly organize activities and publicize the information concerning language and culture of the neighboring countries to teachers and students.

3. Cooperation Strategies on Higher Education in Multi-lateral Platform and International Organizations

Strategic Framework

Cooperation in multi-lateral platform and international organizations are important tools for economic and social improvement. Thailand should raise issues regarding higher educational cooperation in such platform.

Strategies for the cooperation strategy implementation are as follows:

- **Create higher educational cooperation in multi-lateral platform to seek for the cooperative issues and the participation in cooperative framework which Thailand takes part as a member.**

  Take mechanism of ASEAN platform to present the issues on international higher educational cooperation, establish cooperation with non-ASEAN countries which have a relationship with ASEAN, create a role of higher education leader among CLMV countries, and give advice for capacity building to open a free trade to CLMV countries.

  Take mechanism of APEC platform to benefit the education, research, training, academic cooperation, preparation for free-trade agreements, and information and news of APEC.

  Take mechanism of GMS and ACMECS platforms to improve the standards of local universities in Thailand's region to be a cooperative center as well as provide educational services and training in the fields that Thailand is specialized, and take higher education mechanism to help reduce poverty problem by providing a distance education.

  Take mechanism of BIMST-EC platform to create higher educational cooperation by cooperating with India for the development of ICT instruction.

  Take mechanism of ASEM platform to stimulate the creation of continuity in generating ASEM capital in the conference of Ministers of Education in order to strengthen the relationship among Asian countries and the cooperation with European nations and to connect ASEM role with educational quality assurance members.

- **Higher educational cooperation in international organizations**

  Use mechanism in UNESCO framework to establish cooperation on educational quality assurance, credit transfer between international educational institutes, and the development of Thai university curriculum to gain the international acceptance. Furthermore, the educational information and news which UNESCO gathers from its members can provide benefits as a part of the operation of information center and to be widely publicized to the public.

  Use mechanism in SEAMEO framework to take advantages from Centers of Excellence and cooperative network for the existing development such as Agriculture, Science and Multimedia technology, and reducing poverty problem. Three centers that Thailand hosts and specializes are SEAMEO-RIHED, SEAMEO-TROMED, and SEAMEO-SPAFA. Moreover, Thailand might corporate with extra members and related organizations to gather resources and the body of knowledge among members.

Use mechanism in WTO and FTA framework to add the roles of educational organizations in negotiable platform under WTO and FTA framework. This aims to bring about the integration in negotiating to see two-way benefits linking both within and between study fields to increase the effectiveness in negotiation and fully maintain the benefit of Thailand. Besides, impose the conditions for providing academic cooperation on the issues that Thailand needs to prepare before the free–trade agreements in Cross Border pattern covering the issues on e-learning which there is yet no quality control checking system.

The Conditions For Teacher Research In Schools

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Abstract

This study explores teachers' views regarding teacher research and the favorable conditions for teacher research in schools. It was conducted in the south and west division of Sabah using a survey questionnaire completed by 128 school teachers. Descriptive and exploratory data analysis were employed. Factor analysis and t-test were also performed. Findings indicated that slightly over 40% of school teachers have carried out research in the past two years. Out of these, the majority carried out research on their own, for their own professional development and for school improvement. Although the views about research can be seen as positive, many teachers felt that research was difficult. There were some indications of research-engaged culture and conditions for research in schools but it was generally lacking. Findings indicated that time, work load, support, recognition, collaboration, knowledge and training are pertinent issues with regards conditions for teacher research in schools. Emergent conclusions from this research revealed constraining factors and inhibiting factors that hindered the research efforts, whereas conditions that would motivate research in schools are the opportunity conditions, the enabling conditions, and the enhancers.

1.0 INTRODUCTION

School leaders realize that a teacher's professional development contributes largely to a teacher's effectiveness in classroom practice. It has long been recognized (Lankshear & Knobel, 2004; Lewin, 1946; Stenhouse, 1975) that teacher research directs teacher professional identity and better quality teaching and learning. Research has indicated that engagement by teachers in research is desirable and has a beneficial effect on both teaching and learning thus enhancing the quality of education. Richards (2003) asserted that the benefits of teacher research contribute to the school success. Therefore the practice of teacher research is an important agenda in a school's professional development plans. Handscomb and MacBeath (2003) suggested that "*schools can become research-engaged by placing research activity at the heart of the school, its outlook, systems and activity*". Kincheloe (2003, p.18–19) argues that through research teachers "*can explore the learning processes occurring in their classrooms and attempt to interpret them and begin to understand in deeper and richer ways what they know from experience"*.

In Malaysia, this benefit has been recognized but the concept and practice of teacher research is still regarded with wary apprehension by teachers. Consequently, for a culture of systematic evidence-based teacher practice to exist sustainably, the creation of a conducive climate and support structure is a necessary pre-requisite. There is a real need to provide the conditions to develop innovative practice through research enquiry whereby teachers are able to solve problems by achieving deeper understanding (Stenhouse 1980, p1).

1.1 Statement of Problem

Over the years, the researcher has conducted a number of research courses to teachers in schools, and it was generally observed that their reaction to the idea of having to do research was often that of caution and anxiety. This appeared to be a common sentiment. Borg (2006) noted that teacher research is clearly not a widespread activity (in ELT). According to Hargreaves (2001), *'many ... teachers lack a culture of collaborative professional learning by which they might work smarter*.' Even in schools where the culture of teacher research has been initiated, putting in place conditions for sustainable research practice are difficult (Richards, 2003). The researcher has often wondered why that was so, what the teachers' attitudes were, what motivated them, and what conditions hindered their research efforts. More important, what sort of conditions were needed to support and sustain it? However, evidence on such issues of teacher research has not been plentiful (Loughran et al., 2002). This study examined the above questions in the context of the school teachers in the south-west division of Sabah.

Investigating these issues will allow further understanding of the nature of conditions for teacher research. It may also serve to inform school leaders and policy makers regarding the creation of a climate and structure that will allow more research contributions from school teachers.

1.2 Research Objectives and Research Questions

This study intends to give voice to teachers regarding their views about teacher research as well as to find out about the teacher research conditions in their schools. The research questions are:

i. How are teachers involved in research in school?
ii. What are the teachers' views towards research?
iii. How do teachers view their schools' engagement in research?
iv. How do teachers view the conditions for teacher research in their schools?
v. What conditions would motivate teachers to carry out research in their schools?

For the purpose of this study, teacher research refers to "*all forms of practitioner enquiry that involve systematic, intentional, and self-critical inquiry about one's work*" (Cochran-Smith and Lytle 1999, 22). It extends beyond thoughtful teaching of the kind often associated with reflective practice and should also involve, as Freeman (1998) argues, making public one's findings.

2.0 LITERATURE REVIEW

A significant amount of the teacher research may take place within the context of formal programmes of study, such as degree programs or certification courses, but if teacher research is to become an integral part of teachers' professional practices, then it needs to extend beyond such settings and purposes (Borg, 2006) into the school and classroom that engages in research.

2.1 The Research-Engaged School

A research engaged school sees research as an activity for the benefit of the whole school, rather than as something done by an individual for his own interest or career advancement. (Sharp, 2005). Handscomb and MacBeath (2003) suggested that a research-engaged school has four main features: it has a research orientation, it has a research-rich pedagogy, it promotes research communities, and it puts research at the heart of school policy and practice. A school that is research-engaged uses that engagement to sharpen its focus on school improvement and improve teaching and learning. The school becomes involved in both large- and small-scale projects. Supported by school leaders, research engagement is shared among all staff, and gives opportunities for professional development. It helps people in school reflect together about pedagogy, assessment, curriculum and leadership.

2.2 Barriers to Teacher Research in School

Teachers are the best people to carry out classroom research because of their rich schemata; they are also right in the midst of events and problems happening and are often able to make sense of, and respond to a given problematic situation in the classroom. However, research is still largely being regarded as a very difficult enterprise, a time-consuming task which is possibly done only by those who had already possessed the knowledge to do so. Teachers also talked about how busy and overwhelmed they were in just dealing with day to day demands of their jobs. In addition, they were largely intimidated by the conceptual and technical skills they may need to learn (Nair, 2007, p. 7), and so failed to make the link between their daily practice and the academic research process.

The lack of recognition and a culture which ignores their professional knowledge are also deterrents to teacher research. Teachers felt that their schools did not value their research (Kitchen and Jeurissen, 2006). The notion that teachers require time to analyse what they are doing and consider the educational worth of their practices is often at odds with the priorities in schools which typically attach a much higher value to immediate, unreflective action (Calderhead & Gates,1993:3). Nair (2007) believes that the lack of power to alter systems may have contributed to some teachers' reluctance to be involved in research.

2.3 The Conditions Motivating Teacher Research

Teachers who have carried out research believed the effort to have been worthwhile because "*investigating a question of their own choosing was motivating and reflecting on their own practice reinforced the importance of the teacher's role*" (Sharp, 2005). Obviously, among the benefits of teacher research is its contribution to the school success, but the creation of a climate and structure that allows a culture of research practice is necessary.

Borg (2006) believes that there are ten conditions that affect the incidence of teacher research: (1) awareness, (2) motivation, (3) knowledge and skills, (4) choice, (5) mentoring, (6) time, (7) recognition, (8) expectations, (9) community, and (10) dissemination potential. The more of the conditions that are met, the more likely it is that research by teachers will take place. Kitchen and Jeurissen (2006) stressed the importance of support in motivating teacher research, particularly in terms of professional and collegial support, school support, funding and release time. On a similar note, Nair (2007) suggested

the provision of incentives to promote teacher research in the form of monetary allowance, common free time to use for collaborative research and publications as well as conference presentations as variations of recognition. The dedication of the teachers and the support of school leaders are also key conditions in promoting a learning culture within the school.

Reading around the subject (Bolton, 1999; Handscomb and MacBeath, 2003; Sharp, 2005; Borg, 2006; Nair, 2007), the researcher decided to investigate the conditions for teacher research based on the following aspects:

i. Awareness:
Teachers should be aware that research is not necessarily associated with only academics and scientists, experiments and statistics.

ii. Motivation:
Teachers should be motivated to carry out research because it benefits their professional growth and pedagogical activity.

iii. Knowledge and skills:
Teachers should have the knowledge and skills to carry out research in the school.

iv. Choice:
Teacher researchers should be allowed to choose what to study and how to study it.

v. Guidance and mentoring:
Teacher researchers should have access to sources of expertise and advice to mentor them in their research efforts.

vi. Time:
Adequate staff time should be allocated for teachers to carry out research.

vii. Recognition:
The school should recognize the teachers' research efforts by publicly acknowledging their success.

viii. Expectations:
The school should expect teachers to carry out research in order to improve their practice.

ix. Research culture:
The school should exhibit a culture that values openness, reflection and professional debate that encourages research.

x. Sharing and dissemination:
Teachers should be given opportunity to disseminate their research findings through publications/seminar presentations.

xi. ICT and Resources:

Teachers should have access to ICT and other resources that facilitate their research efforts.

xii. Collaboration:
Teacher researchers should be supported by the collaborative efforts of colleagues.

3.0 METHODOLOGY

In this study, a survey research design was used. A survey seeks to gather data at a particular point in time with the intention of describing the nature of existing conditions (Cohen & Manion, 1994:83). The sample was randomly selected from the population of school teachers in the south-west division of Sabah.

3.1 Instrumentation

A questionnaire was used to obtain feedback from the survey. Questionnaires provide a very efficient way of allowing systematic recording of item by case matrix (de Vaus, 1991:80). They also allow coverage of a large, representative sample in a cost-effective manner (de Vaus, 1991:105). The questionnaire was divided into 7 sections:

A. Demographic details
B. Respondents' involvement in teacher research in school – the number of research done, how the research was carried out, the types of research and the role respondent play in research in school.
C. How respondents feel about research. This section has three questions that asked if respondents perceived research as (1) easy or difficult (2) necessary or unnecessary (3) Interesting/boring. Each question was evaluated using a 4-point numerical scale
D. Respondents' views about teacher research – this section examines respondents' liking for research
E. Respondents' opinion about schools' engagement in research – this section probes the respondents' opinion about the school's research status and the leaders' role in promoting research.
F. Respondents' views about the teacher research conditions in their schools – this section elicits the respondents' evaluation of the conditions for research based on the twelve conditions discussed above,
G. This last section allows the respondents to write their views about conditions that support or hinder research efforts, and suggestions to encourage sustained research in schools.

The items in sections D, E, and F were based on information drawn from reading the literature on teacher research and teacher research conditions in schools (Bolton, 1999; Handscomb and MacBeath, 2003; Sharp, 2005; Borg,2006; Nair,2007) In this questionnaire, "research", "teacher research" and "classroom research" are interchangeably used to mean the same concept. Responses were based on a Likert-type 4 point scale ranging from *1 = strongly disagree* to *4 = strongly agree*. The responses to the questionnaire were collated and analysed for answers to the research questions.

3.2 Data collection and data analysis

The questionnaires were distributed to teachers from the south and west division of Sabaah who attended the research course conducted by the researcher. Participants were requested to take back the questionnaires to be completed by teachers randomly selected from their schools. Stamped and self-addressed envelopes were provided for returned questionnaires by post.

Data was analysed with SPSS to obtain the descriptive scores for the questionnaire items and to make the summated variable of the constructs regarding teacher views on research, school's engagement in research, and teacher views on conditions for research. Descriptive analysis would show the mean score and standard deviation for each item and construct and allow writing description of the data. Exploratory data analysis would enable identification of group characteristics, for example, mean scores between rural-urban respondents and other variables. T-test and factor analysis were also performed.

The reliability score for all the items was cronbach alpha .846, which means that the instrument can be considered good and the findings reliable. The reliability score for each construct will be displayed at each respective table. The results of the data analyses are visually presented in the following section in tables or figures.

4.0 FINDINGS AND DISCUSSION

4.1 Demographic Details

128 respondents (male = 28, female = 99, missing = 1) returned the questionnaires from various districts in the south-west division of Sabah. 83 (64.8%) of the respondents were subject teachers; 26 (20.3%) held positions as panel head in addition to teaching duties, and 13 (10.2%) were senior assistants. The rest (n = 6, 4.8%) were department heads, headteachers or school counsellors.

Table 1
Distribution of Respondents by Areas

School Areas	Frequency	Percent
Urban area	63	49.2
Rural area	65	50.8
Total	128	100.0

Respondents were also categorized into two main areas: those from the districts of Kota Kinabalu and Penampang were categorized into the urban[1] area category, and those from Papar and surrounding areas were categorized into the rural area category (Table 1). There was an almost equal number of respondents from the rural and urban areas.

[1] Kota Kinabalu is the capital city of Sabah, and Penampang is in the suburbs of Kota Kinabalu. The Papar district about forty-five kilometers south of Kota Kinabalu is considered rural.

4.2 Teachers' involvement in research

This section answers the research question "How are teachers involved in research in school?" Data was derived from Section B of the questionnaire. Findings indicated that 40.6% of the respondents have carriied out research over the past two years.

Table 2
The Number of Research Done by Respondents in the Past Two Years

Areas		No research done	one research	two researches	three researches	more than three researches	Total
Urban	No. of respondents	46	13	3	0	1	63
	% of Urban	73.0%	20.6%	4.8%	0.0%	1.6%	100.0%
	% of total no. of research	60.5%	46.4%	21.4%		16.7%	49.2%
Rural	No. of respondents	30	15	11	4	5	65
	% of Rural	46.2%	23.1%	16.9%	6.2%	7.7%	100.0%
	% of total no. of research	39.5%	53.6%	78.6%	100.0%	83.3%	50.8%
Total	No. of respondents	76*	28	14	4	6	128
	% of total	59.4%	21.9%	10.9%	3.1%	4.7%	100.0%

59.4% (n = 76) of the total number of respondents have not done research in the past two years; 21.9% (n=28) have carried out one research and and 10.9% (n=14) carried out two researches (Table 2). Out of a total of the 76 respondents who have not done research, 60.5% (n = 46) were from the urban areas and 39.5% (n = 30) were from the rural areas. A t-test (equal variances assumed) performed on the number of research done by rural and urban teachers indicated that there is a significant difference (Sig 2-tailed = .000) in the number of research done between the two groups. Exploratory analysis showed that the average number of researches carried out in rural areas (mean = 2.06) is higher than that carried out in the urban areas (mean = 1.26).

Table 3
Types of research and how It is carried out

How it is carried out / Types of research	no research	individually	with another colleague	with a group of colleagues	Total
No research	68 (95.77%)	2 (2.82%)	1 (1.41%)	0 (0.00%)	71 (100%)
research for my own professional development	1 (3.7%)	19 (70.37%)	2 (7.41%)	5 (18.52%)	27 (100%)
research for school improvement	1 (3.57%)	12 (42.86%)	7 (25.00%)	8 (28.57%)	28 (100%)
research for state and/or national policy makers	0 (0%)	1 (50%)	0 (0%)	1 (50%)	2 (100%)
Total	70[2] (54.69%)	34 (26.56%)	10 (7.81%)	14 (10.94%)	128 (100%)

In analysing the types of research and how it was carried out (Table 3), it was found that 27 respondentsdid research for their own professional development, and 28 respondents did research for school improvement. Most of the 34 respondents who carried out research individually either did it for their own professional development (n=19) or for school improvement (n=12). Research for school improvement was caarried out more collaboratively (n=7 + 8 = 15) than individually (n=12).

Table 4
Types of research and respondents' role in research

	No research	research for my own professional development	research for school improvement	research for state and/or national policy makers	Total
no role	65	7	3	0	75
as a researcher		12	7	1	20
as a research committee member	6	4	15	0	25
as a research	0	4	2	1	7

[2] * The slight discrepancies in the number of respondents who replied as 'no research' (Tables 2, 3 &4) could be explained by the fact that the initial question asked for the number of research done in the "past two years" whereas the subsequent questions requires them to respond to their practices that could possibly be more than two years before

	No research	research for my own professional development	research for school improvement	research for state and/or national policy makers	Total
facilitator/mentor as head of research committee	0	0	1	0	1
Total	71*	27	28	2	128

Most of the respondents (n = 7+12= 19, Table 4) who carried out research for their own professional development carried no posts (19 out of 27); some were research committee members (n = 4) and research facilitators/mentors (n = 4). The majority who carried out research for school improvement held positions as committee members research (n = 15), facilitator/mentor (n = 2) or headed the research committee (n = 1), but 10 (3+7) who carried out research for school improvement held no post. Very few respondents (n = 2) were involved in research at state or national level.

4.3 Teachers' views about research

This section answers the research question "what are the teachers' views towards research?" Data was derived from Sections C and D of the questionnaire. In section C, respondents were asked about their feelings about research (Figure 1). They felt that research was difficult (mean = 1.73). However, they were less negative in their opinions about the interest (mean = 2.48) and necessity (mean = 2.73) of research.

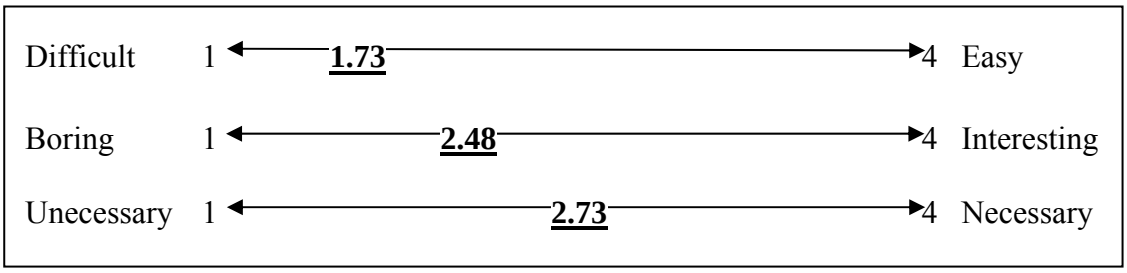

Figure 1 Teachers' feelings about research

In section D, respondents were also asked their views about teacher research. They had positive views about teacher research.

Table 5
Views about teacher research

Items	Mean	Std. Deviation
Enjoy discussing or listening to discussions about research	2.99	.554
Enjoy reading research papers related to my teaching practice	3.02	.554
Find people who do research very interesting to listen to	2.99	.608
Interested in doing research at some time	2.91	.615
Would enjoy carrying out a research in my school	2.84	.661
Research is important in improving teaching practice	3.28	.639
Overall Mean and Std Deviation	3.01	.489
1 = strongly disagree 2= disagree 3 = agree 4 = strongly agree Cronbach's Alpha = .893		

The overall mean for this construct was 3.01 (Table 5). Teachers agreed that research is important in improving teaching practice (mean = 3.28); they enjoyed reading research papers related to the teaching practice (mean = 3.02), they enjoyed discussing or listening to discussions about research (mean = 2.99), and they also found people who do research very interesting to listen to (mean = 2.99). However, the idea of carrying out their own research was met with slight reservations (means = 2.91, 2.84).

4.4 Views about schools' engagement in research

This section answers the research question "how do teachers view their schools' engagement in research?" Data was derived from Section E and Section G (3) of the questionnaire. Items E7 (the scarcity of research) and E8 (teacher reluctance towards research) from the questionnaire were negatively worded. During analysis of the construct, the values of these two items were reversed to obtain a correct mean value. Generally, teachers' views regarding their schools' engagement in research was less positive (overall mean = 2.78).

Table 6
Views about their schools' engagement in research

Item variables	Mean	Std. Deviation
Teacher research in my school is scarce (reverse coding)	1.99	.658
Teachers in my school are reluctant to carry out classroom research (rev. code)	2.25	.701
The school place great emphasis on research.	2.71	.577
The school leaders values the researches carried out by teachers	2.67	.653
The school leaders integrate the research activity into the existing school system	2.64	.673
The school uses the evidences from teacher research for school improvement	2.70	.694
Overall Mean and Standard Deviation	2.78	.489
1 = strongly disagree 2= disagree 3 = agree 4 = strongly agree Cronbach's Alpha = .771		

Teachers thought that teacher research in school was scarce; they were generally reluctant to carry out classroom research (Table 6). Nevertheless, it was interesting to note that their evaluation of school efforts to motivate engagement in research, although not positive, generally scored higher.

Table 7
Reasons why teachers were reluctant to carry to carry out research

Reasons	**No. of written responses**
Lack of Time	33
Too much work	20
Difficult & Too Much Documentation / Lack of knowledge	21
Not interested/not motivated	4
Not important Irrelevant	9
Lacks Utility Value	7

Analysis of data from Section G 3 of the questionnaire (Table 7) about why teachers were reluctant to carry to carry out research revealed three main reasons, namely the lack of time (f = 33), too much work (f = 20), and the difficulty or lack of knowledge factors (f = 21). Teachers wrote that "*my school always has a lot of programme or activities. Therefore we unable to spend time on research*" and that there was "*inadequate allocation of time to carry out research*." Research was also "*new for me and the school.. I have no idea –never done research before*" and "*there's no mentor to guide researchers in their research*." There were also a small number of respondents who were not interested (n = 4) and those who viewed research as unimportant or irrelevant (n = 9). Other reasons were related to the issue of the lack of recognition and utility value of the research (n = 7). Respondents wrote that there was "*no recognition –as researches are done and documented but there will be no follow-up ... results of research hardly used to change the education system and ... outcomes from the research remain outcomes. There are no implementation*" Respondents therefore viewed the outcomes of research as "*not applicable for all"*

4.5 Teachers' views about the conditions for teacher research in their schools

This sections answers the research question "how do teachers view the conditions for teacher research in their schools?" It reports the teachers' views about the existing conditions that supported or hindered teacher research in their schools. Data was derived from Sections F and G of the questionnaire. In Section F, respondents were asked to evaluate the research conditions in their schools based on the followng: awareness of the nature of teacher research, motivation to carry out research, knowledge and skills to carry out research, freedom to choose, access to expert guidance, adequate time given to research, recognition, school expectation, school research-engaged culture, opportunity for sharing and access to ICT and other resources. .

Table 8
Research conditions in schools

Conditions	Mean	Std. Deviation
Awareness	2.71	0.69
Motivation	2.86	0.70
Knowledge and skills	2.58	0.69
Choice	2.91	0.62
Guidance and mentoring	2.66	0.62
Time	2.43	0.73
Recognition	2.55	0.66
Expectations	2.85	0.59
Research culture	2.63	0.64
Sharing and dissemination	2.70	0.69
ICT and Resources	2.87	0.70
Collaboration	2.80	0.66
Overall Mean and Standard Deviation	2.71	0.461

1 = strongly disagree 2= disagree 3 = agree 4 = strongly agree
Cronbach's Alpha = .764

Overall, teachers were less positive about the conditions for doing research in their schools (overall mean = 2.71, Table 8). However, analysis of individual items revealed that they were nearly positive about being allowed to choose what to study and how to study it (mean = 2.91). School support conditions like ICT and resources (mean = 2.87), school expectations (mean = 2.85) and self-motivation (mean = 2.86) were also nearly positive.

Table 9
School conditions that supported/hindered research

Conditions	Conditions that hindered: (No. of written responses)	Conditions that supported: (No. of written responses)
School and leader support		9
Teacher support		6
Infrastructure support		3
Too much workload	15	
Time constraints	12	
Not interested/not motivated	6	
Lack of skillls and knowledge	5	
Lack of resources	3	
Total No. of written responses	41	18

Analysis of written feedback in Section G (1) revealed that 18 respondents (Table 9) felt that school conditions, mainly the school leaders, supported the research activities. "*..the school leader support the researches carried out by teachers,... the headmaster is very encouraging"*. However, although some teachers felt very supported, much more did not. Those who did not felt that time was the condition most lacking (mean = 2.43) of the

twelve conditions evaluated (Table 8). They also felt that their knowledge and skills to carry out research (mean = 2.58) was inadequate, and that teachers did not really have access to sources of expertise and advice to mentor them in their research efforts (mean = 2.66). It was also felt that there was a lack of public recognition from the schools for their research efforts (mean = 2.55). In section G (1), 41 respondents (Table 10) wrote that school conditions hindered research, citing workload (f = 15), lack of resources (f = 3), time constraint (f = 12), lack of skills and knowledge (f = 5), and lack of motivation and interest (f = 6) as the reasons. Such observations corresponded with the earlier discussion regarding why teachers were reluctant to carry out research.

4.6 Conditions for teacher research in schools

This section answers the research question "What conditions would motivate teachers to carry out research in their schools?" Data for this question was derived from Section G (2) of the questionnaire, in which respondents were asked to give suggestions on how they can be encouraged to carry out research regularly in their school. Data was collated and analysed for frequencies of similar responses and coded accordingly (Table 10).

Table 10
Conditions for teacher research in schools

Conditions	Number of Written responses
Time allocated for research	57
Training and guidance	45
Reduce work load	40
Support from school leaders	30
Teacher cooperation and collaboration	15
Recognition	15
Resources	14
Raise awareness on the importance of research	12

A factor analysis of the items in sections D, E and F of the questionnaire was also conducted to determine if there were any underlying factors within the data that could identify the conditions. The use of factor analysis was deemed to be appropriate for the data based on the results of the Bartlett test of sphericity that returned a significance level of .000. In addition, its measure of sampling adequacy (KMO MSA) value of .886 is meritorious, also indicating that the factor analysis can be performed.

The factor analysis was conducted using the principle component method of extraction and varimax rotation. It was decided that for a condition to load on a factor, it must have a minimum absolute value of .45 and must not have loaded on another factor at an absolute value of .450 or greater. The twenty-four items were reduced to six factors, which accounted for 70.65% of the variance. Factor loadings ranged from .907 to .511. The results of the factor analysis are shown in Table 11.

Table 11
Coefficient Loadings of Conditions for Factors

Component factors	Individual Attitude	Utilitarian Value and Recognition	Enabling factors	Opportunity Factors	Inhibiting factors	School culture
% of Variance	36.335	12.387	6.841	5.897	4.935	4.258
Cumulative %	36.335	48.722	55.563	61.460	66.394	70.653
Find researcher interesting	0.833	0.168	0.083	0.043	-0.137	-0.087
Enjoy discussing research	0.812	0.181	0.168	0.005	-0.037	0.023
Enjoy reading research papers	0.800	0.121	0.230	0.065	-0.048	-0.152
Would enjoy carrying out research	0.788	0.050	0.168	0.109	0.069	-0.089
Interested in doing research	0.737	0.234	0.261	0.091	-0.039	0.149
Research is important	0.680	0.163	0.070	-0.170	0.031	0.293
The leaders values researches	0.144	0.863	0.178	0.016	-0.030	-0.005
The school uses the evidences	0.218	0.807	0.145	0.276	0.027	0.065
The leaders integrate research	0.206	0.787	0.327	0.121	0.077	0.082
Recognition	0.043	0.675	0.075	0.444	0.156	0.259
School emphasis on research.	0.332	0.660	0.308	0.097	-0.015	-0.109
School expectations	0.182	0.587	0.271	0.056	0.318	0.308
Teacher	0.070	0.089	0.796	-0.108	-0.018	-0.014

Component factors	Individual Attitude	Utilitarian Value and Recognition	Enabling factors	Opportunity Factors	Inhibiting factors	School culture
awareness.						
Access to ICT and other resources	0.219	0.252	0.712	0.060	0.212	-0.005
Teachers see the benefits	0.360	0.266	0.689	0.005	0.146	0.082
Researchers are supported	0.250	0.340	0.651	0.131	0.220	0.095
Researchers allowed to choose	0.287	0.152	0.600	0.114	-0.351	0.037
Access to sources of expertise	0.134	0.201	0.572	0.441	0.146	0.244
Research knowledge and skills	0.134	0.243	0.544	0.433	-0.041	0.292
Adequate staff time is allocated	-0.017	0.195	-0.039	0.860	0.044	0.050
Opportunity to disseminate	0.123	0.400	0.382	0.511	0.011	-0.169
Teacher research is scarce	-0.030	0.072	0.056	-0.029	0.867	-0.120
Teachers reluctant	-0.107	0.101	0.131	0.165	0.697	0.324
School culture for research	-0.034	0.096	0.103	0.069	0.055	0.907

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Rotation converged in 6 iterations.

The first factor was the individual attitude towards research. This factor accounted for 36.3% of the explained variance, indicating that a positive attitude towards research is an important factor influencing the research culture in school. Factor loadings ranged from .680 to .833. Individuals who scored high on this factor found people who do research very interesting to listen to, enjoyed discussing or listening to discussions about research, enjoyed reading research papers related to my teaching practice, would enjoy carrying out a

research in my school, was interested in doing research at some time and felt that research is important in improving teaching practice. .

The perceived utilitarian value and recognition factor explained 12.4 % of the total variance. Factor loadings ranged from .587 to .863. Individuals who score high on this factor believe that they will be motivated in carrying out research if the school values, recognizes and utilizes their research work. Additionally, they would feel motivated if the school placed great emphasis on research and indicates its expectations of teachers to carry out research in order to improve their practice. Data from section G(2) of the questionnaire also identified that recognition (f = 15), resources (f = 14), and raising awareness on importance of research (f = 12) are noteworthy (Table 10). Some interesting feedback are noted as follows:

i. *publish all the research on the internet so others can see and read about it*
ii. *show the result of research by me or other people recognize the teachers' research effort*
iii. *financial back-up given*
iv. *give money for valuable action research done and submitted by teachers*
v. *provide conveniences to teacher*
vi. *explain and understand the benefits from the research done in school to the other colleagues. From the research they can make a lot of improvement in their proficiency in teaching and learning*
vii. *my school admin have to be re-educated on the importance of action research*

Enabling factors explained 6.8% of the total variance of the combined factors. Factor loadings ranged from .544 to .796. Individuals scoring high on this factor view certain conditions as important in enabling the research process. Teachers want ICT and other resources in place and supported by the collaborative efforts of colleagues as well as access to knowledge and skills and sources of expertise and advice to mentor them in their research efforts. In section G (2) of the questionnaire, a large number of teachers wrote about the need for knowledge, skills and guidance (f = 45). Respondents wrote, "*please expose us on how to do research so we have the idea*" and "*provide guidelines on how carry out a research*". They also needed "*constant facilitation/guidance",* and asked for "*more motivation and guidance".*

From the factor analysis, opportunity factors contributed 5.9% to the total variance explained. The two items loaded in this factor indicated that staff was more likely to carry out research if adequate staff time was allocated and if teachers were given opportunity to disseminate their research findings through publications/seminar presentations . Lack of these factors would constrain research efforts. Factor loadings for the two conditions were .860 and .511 respectively. In section G(2), the largest number of teachers (f= 57) felt that adequate allocation of time for research was necessary for teacher research. Respondents wrote that they would like "*more time for research slots given to teachers to carry out/ explore materials*" and that "*if we are given an allotted amount of time to do the research, aside from our T&L, then maybe I can carry out research regularly*."

In relation to the issue of time constraints, the suggestion to reduce the workload was also an important condition for teacher research. 45 respondents from section G (2) gave

suggestions like "*reduce teachers' work load in order to carry out research*", "*less or decrease teaching periods*" , "*less the burden of teacher doing mostly paperwork"* and "*less periods maybe in future I will do research on pupils in my school.* "
From the factor analysis, inhibiting factors contributed 4.9 % to the total variance explained. This factor was interpreted and labeled by reversing the meaning of the factor. Thus, individuals with a low score on this factor are more likely to think that teacher research in school was scarce (.867) and that teachers were reluctant to carry out classroom research (.697).

The final factor is school culture which contributed only 4.3 % to the total variance explained and only one condition loaded on this factor but the factor loading was high (.906). A school that exhibits a culture that values openness, reflection and professional debate would encourage research. Of notable importance is also the condition of school and leader support (f = 30, Table 10). Respondents wrote in section G (2) that "*first of all the management of the school must give the permission and fully support to carry out the research."* In addition, "*cooperation and encouragement from the administrators"* is needed. One respondent wrote, "*principal/administration should encourage teacher to do research as performance indicator."*

Respondents felt that teacher cooperation and collaboration (f = 15), that is , "*the research supported by collaborative efforts of colleagues and school leaders",* is also important. One respondent wrote that "*working together along with other teachers is crucial"*. Teachers probably needed "*greater cooperation among teachers to collate and write the report"*

4.7 The rural-urban difference

It was noted earlier that there was a significant difference in the number of research carried out between the urban teachers and the rural teachers groups.

Table 12
Independent samples test between urban and rural groups

	Levene's Test for Equality of Variances F	Sig. (Equal variances assumed)	t-test for Equality of Means t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Views about teacher research	0.484047	0.487876	-3.24896	126	0.001485	-0.27971	0.086091	-0.45008	-0.10933
School Research engagement	0.004923	0.944172	-2.51927	126	0.013011	-0.21779	0.086448	-0.38886	-0.04671
Conditions for research	0.911497	0.341546	-2.45848	126	0.015311	-0.19654	0.079944	-0.35475	-0.03833

T-tests were therefore done between the groups with regards their views about research, the school engagement in research and the conditions for research in their schools (Table 12). Significant differences were observed from these tests.

Table 13
Differences between urban and rural groups

Constructs	Areas	N	Mean	Std. Deviation
Views about teacher research	Urban	63	2.81	0.506
	rural	65	3.09	0.468
School Research engagement	Urban	63	2.67	0.375
	rural	65	2.89	0.578
Conditions for research	Urban	63	2.61	0.465
	rural	65	2.81	0.439

Generally, the mean scores from rural teachers for views about teacher research, school research engagement and conditions for research appeared higher than the mean scores from the urban teachers (Table 13). A t-test (equal variances assumed, sig = 0.488, 0.944, 0.342 respectively, Table 12) on both groups indicated that there are statistically significant differences (sig. 2-Tailed = 0.002, 0.013, 0.015 respectively) between the urban and rural groups regarding the 3 constructs. Since the means for the rural group of respondents were greater than the means for the urban group (mean = 2.80), it can be concluded that respondents from the rural areas were more positive about teacher research, school research engagement, and conditions for research in their schools than respondents from the urban area.

5.0 DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Teacher Research in School

Slightly over 40% of school teachers have carried out research in the past two years. Out of these, the majority carried out research on their own, for their own professional development and for school improvement rather than for policy-making purposes. A large number of them held no posts in the school research set-up. The majority who held posts in school research committees were involved in research for school improvement.

Table 14
Overview of teacher research and conditions in schools

Teacher Research And Conditions in Schools	Mean	Std. Deviation
Feelings about teacher research	2.351	.658
Views about teacher research	3.005	.489
School engagement in research	2.783	.489
Research conditions in school	2.712	.461
1 = strongly disagree 2= disagree 3 = agree 4 = strongly agree		

Table 14 provides an overview of teacher research views and research conditions in schools in the south-west division of Sabah. Since factor analysis indicated that individual attitude towards research is the most important factor for teacher research, it is significant that the

views of the respondents about research is positive. Teachers who view research positively may be motivated to follow up their interests. However findings indicated that many teachers felt that research was difficult. As Williams and Coles (2003) maintained, " *the school environment and culture influenced teachers' motivation to use research evidence, with senior management playing a key role*." In this research, there were some indications of research-engaged culture and conditions for research in schools but it was generally lacking. Time, work load, support, recognition, collaboration, knowledge and training are pertinent issues with regards conditions for teacher research in schools.

Emergent findings from this research have identified conditions that hinders and and conditions that support the research activity in schools. **Constraining factors** and **inhibiting factors** hindered the research efforts, whereas conditions that would motivate research in schools are the **opportunity conditions**, the **enabling conditions**, and the **enhancers.**

5.2 Factors that Hinder Research

Constraining factors and inhibiting factors could explain for teachers' reluctance in carrying out research.

Constraining factors are the key factors that thwarted the research initiatives. Concerns about barriers to teacher research have been continuously debated in the past (Nixon, 1987; Fischer et al., 2000; Eldridge, Stein, Wasko and Peña, 2008). It was not surprising that time and workload were major constraints for the teacher-researchers and hindered teachers from the opportunity of starting a research. As Richards (2003: 7) states, '*the time required to do even the most limited research project is immense*'. Very often, teachers were busy and overwhelmed in just dealing with day to day demands of their jobs. Sharp (2003) reported that teachers found the major challenge lay in finding time to focus on research. It is suggested that time for collaborative research be included in the teachers' time-table. Nair (2007) suggested that completed research may be rewarded with time given to conduct more research or take a further qualification.

Inhibiting factors are deterrents to the research practice. The teachers' lack of knowledge and skills, and the lack of expert guidance and mentoring inhibited their desire to carry out research. Hence the notion of research as a difficult exercise. This could have explained their reluctance to be involved in research and the resultant lack of research done over the past two years. There could be research collaboration and partnerships between schools and local higher education institution to foster teachers' confidence in addition to giving them access to expertise and resources.

In addition to their lack of knowledge and skills, the perceived lack of the utility value of research and the perceived lack of recognition for the research efforts is manifested in their expression of disinterest towards research. Nair (2007) explained that there is not more evidence of teacher research impacting on practice due to the social and political contexts in school; the school cultures; and teachers' perceptions of their roles and personal efficacy.

> *"the link between teachers' daily practice and the academic research process is not often made. So, teachers may undervalue their currently practiced skills and be intimidated by the conceptual and technical skills they may need to learn or revise."* (Nair, 2007, p. 31)

Similarly, Cochran-Smith & Lytle (1992) expressed some concern about teachers having a basic contempt for research that prevent them from engaging with it. Such barriers could have affected a teacher's efficacy as a researcher.

5.3 Conditions that Motivate Research

Teacher research is in the developing stages in our schools and needs to be well disseminated and actively supported from the top. Ellis (1997: 22) contends that "*teachers should become more than consumers of theories and research; they should become researchers and theorists in their own right"*. However, the above discussion has identified many stumbling blocks along the way. These barriers can be alleviated by the creation of more favourable conditions for teacher research. Many more teachers will have the courage to embark on a journey of learning with their students, if they know they will be helped. The conditions that support and encourage the research efforts can be categorized as: the **opportunity conditions**, the **enabling conditions**, and the **enhancers**.

Opportunity conditions are achieved by overcoming the key constraints of time and work load. In Maslow's Theory (1943), the deficiency needs have to be met according to the hierarchy of needs. Similarly in motivating research,opportunity conditions have to be met. Due consideration should be given to alleviating the teachers' key constraints by reducing work load and increasing time given to research. This would allow them the opportunity to think about moving upwards to their next level of professional advancement by doing research. Once the opportunity conditions are met, seeking to satisfy professional growth may spark the inclination towards research as inquiry in improving teacher practices.

Enabling conditions are important to drive research. These are conditions such as imparting knowledge and skills, providing training and guidance as well as support and collaboration to teacher researchers. These are neccesary tools that would enable the teacher to carry out the research activity. In order to provide the support for a community of enquiry to be built between research and practice among novice researchers, mentors who plays the role of '*translators, envoys and mediators*' of the research practice (Saunders, 2004 in Sanders and Tomlinson, 2004) are needed to guide through the whole process. The National Foundation for Educational Research research project in the United Kingdom (Sharp, 2003) that utilized a small team of professional researchers working collaboratively with teachers in 15 primary and secondary schools to engage in research "*gave teachers a sense of professionalism and put them in the driving seat*".

Kitchen and Jeurissen (2006) reported that teachers talked about feelings of loneliness while carrying out their research and suggested that collaborative actions in research "*helped the teachers to manage the research process and persevere when problems seemed insurmountable"*(p. 38). Therefore schools that aspire towards an environment that fostered teacher research should possess a positive attitude towards research and involve senior management and others in study. They should also have systems in place for regular feedback from staff who had undertaken professional development.

Enhancers are important in providing the incentives and building the right attitude for sustained research efforts. They come in the form of recognition and the provision of various platforms for sharing and dissemination of research ideas that motivates teachers to

continue with the research efforts and enhance not only their research skills and knowledge, but also enhance the quality of their classroom practices as well. In turn, these researchers may become mentors and motivators to other researchers. Such positive attitude towards research is important in building a research-engaged school.

The provision of various platforms and opportunities to disseminate findings and allow the voices of teacher researchers to be seen and heard is a significant condition for teacher research. Publishing research on schools' website motivates teacher researchers, and "*lead to the recognition that teacher research is directly related to improving pupils' lives and so has a moral dimension"* (Nair, 2007). Teachers should also be encouraged to publish in academic journals and share their findings in seminars and conferences in order to reach a wider intended audience. Kitchen and Jeurissen (2006) reported that "*being able to share their stories, journeys, and findings with others was extremely rewarding, empowering, and motivating"....and on the other hand ... "not having access to a wider audience of some kind was constraining and frustrating*.." (p. 39). These platforms of sharing and dissemination would also aid in dispelling the misperceptions about research as the field of 'experts' only and therefore aid in improving the perceived utilitarian value of research. .

In addition, teachers could also be persuaded to view themselves as both producers and consumers of research experiences rather than just the former. Research should add to the store of knowledge and bring about professional development that ultimately benefit our learners, and "*not merely for the uncritical glorification of knowledge generated through practitioner research*" (Zeichner, 1993 p.201). This involves a recognition that practitioners are professionals who must play active roles in formulating the purposes and ends of their work as well as the means**.** As Stenhouse (1975) states, "a *research tradition which is accessible to teachers and which feeds teaching must be created if education is to be significantly improved*". Teachers as research practitioners have theories too, that can contribute to the knowledge that informs the work of practitioner communities. Teachers need to realize that the generation of knowledge about good practice and good institutions are not the exclusive property of universities and research and development centres. Research and inquiry can be seen as a ground up process, with classroom teachers generating the knowledge and experience most pertinent and relevant to our conditions (Zeichner, 1993 p.204).

The data for the above discussion was gathered from the views of the 128 respondents in the south-west division of Sabah, and it may provide a loosely representative picture of teacher research engagement in the area, but more research should be done on a larger catchment of the total population to allow broader generalized conclusions. Findings also revealed a curious difference in terms of more favorable feedback from rural teachers compared to urban teachers. Future research may delve deeper into finding explanations for the differences in the rural and urban opinions.

Since the factor analysis indicated that individual attitude towards research is the most important factor for teacher research, it can be concluded that the generally positive views of teachers with regards teacher research was an important advantage for the schools. What is needed now is to optimise the opportunity conditions by allowing teachers the time and space to start thinking about research. Then the enabling conditions should be put in place to provide them the tools to carry out the research. Finally, the enhancers should serve to ensure sustainability of the research culture in schools.

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Moral Development by Using "Kha Ya Boon" Activities

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Abstract

"Kha Ya Boon" means garbage, rubbish, scrap of paper, as well as unused thing that have been thrown away in the school yard, then collected and put together to be sold. The money from the sell of these materials is then returned to the students as their scholarship, moreover, some garbage and rubbish are reused. It is held that teaching the students to learn to collect the garbage thrown in the school yard encourage them to do righteous or meritorious deeds according to Buddhist teaching.

"Morality" means the quality of being a good person for the benefit of individual and society. Moreover, morality needs to be practiced and repeated again and again until it becomes habitual. It begins from out to inner habit.

Anubaan Chiangmai School is aiming to develop the students to be good, clever and happy, focusing on students center education and encouraging them to investigate, analyze and search for the body of knowledge by themselves; moreover, moral cultivation through activities are provided. It is believed that morality is a based of education and that it should be introduced by the teacher as effectively as possible. The school uses Kha Ya Boon activities as base to cultivate the students morality both in direct and indirect ways.

Objectives of education research: to study how to cultivate the morality through "Kha Ya Boon" activities and to study the result of moral cultivation through "Kha Ya Boon" activities.

From the study, it was found that "Kha Ya Boon" activities are meritorious and methods to cultivate the morality. The students on these activities changed their behavior modification in a good way, loving to appreciate a clean environment. Students had disciplined, not littering in the school and classroom and they were responsible and cooperative in seeking to preserve the environment of their school.

Significance of Research

The Royal Academy dictionary has defined the word "Kha Ya" as rubbish or garbage and the word "Boon" as a meritorious deed according to a religious teaching. Adding the two words together (Kha Ya + Boon) as "Kha Ya Boon", it means garbage, rubbish, scrap of paper, as well as unused things that have been thrown away in the school yard and then collected and put together to be sold. The money, from the sale of these materials is then returned to the students as their scholarship; moreover, some garbage and rubbish are

reused. It is held that teaching the students to learn to collect the garbage thrown in the school yard encourage them to do righteous or meritorious deeds according to Buddhist teaching.

According to Buddhism, there are 10 bases of meritorious actions as follows:

1) Meritorious action consisting in generosity by giving something to the monks or general people.
2) Meritorious action by observing the precepts or moral behaviour.
3) Meritorious action by mental development.
4) Meritorious action by humility or reverence.
5) Meritorious action by rendering services.
6) Meritorious action by sharing or dedicating merit to another person.
7) Meritorious action by listening to the Doctrine or other good instruction
8) Meritorious action by rejoicing in an other's merit.
9) Meritorious action by teaching the Doctrine or other truth
10) Meritorious action by forming correct views.

The word "morality" describes the quality of being a good person for the benefit of individual and society. It is not a law that has punishment for violators. Morality comes from our inner motivation, but it may be supported by law as an outer motivation. Generally, morality is based on religion because religious teaching is a part of the social moral system and rooted as its traditions and cultures. Moreover, morality needs to be practiced and repeated again and again until it becomes habitual. It begins from outer to inner habit. Morality is also concerned with good-bad, right-wrong and appropriate-inappropriate values that are judged by individual conscience. The activities used to encourage students them to develop morality by themselves should be used along with moral cultivation instead of rules or laws.

The current concept of human resource development focuses more on morality than knowledge. It is believed that the moral cultivation is a way to develop the national human resources expected by society. This encourages them to live happily with others in the society. Therefore, it is our responsibility for the moral cultivation. A school, as a place to develop the human resource as effective as possible, is expected by the society to play this important role, motivating the student to be a good member of the society and to understand rational truth. The moral cultivation and needed characteristics through activities such as Kha Ya Boon should be focused on in the schools. Unfortunately, in fact, most schools focus more on knowledge than morality. As it stands now, the quality of human resources in the future will not be different from the present; man is deficient in morality though he is knowledgeable and intellectual.

Anubaan Chiangmai School is a government school, under the Office of the Fundamental Educational Committee of the Ministry of Education. It is open for kindergarten and primary levels, aiming to develop the students to be good, clever and happy, focusing on students center education and encouraging them to investigate, analyze and search for the body of knowledge by themselves; moreover, moral cultivation through activities are provided. It is believed that morality is a base of education and that it should be introduced by the teachers as effectively as possible. The school uses Kha Ya Boon activities as a base to cultivate the students' morality both in direct and indirect ways. Furthermore, morality is also applied in the other subjects according to the curriculum. One of the prominent extra

activities held by the school is Kha Ya Boon. It is obvious that it helps the students to develop their morality. This also answers the question "How to develop morality?"

Concept/Article

1. Concept of moral cultivation
   1.1 Behavioral improvement
   1.2 Grouping process
2. Human resource development, focusing more on morality than knowledge
3. The theory of moral cultivation according to Bandura's social learning
4. Article "Kha Ya Boon supporting morality to lead life through Buddhist sufficiency economy"
5. Article on knowledge and morality
6. Related researches

Objectives

1. To study how to cultivate the morality through "Kha Ya Boon" activities
2. To study the result of moral cultivation through "Kha Ya Boon" activities

Expected advantages from the research

1. The students will change their behaviour in a good way, loving to appreciate a clean environment.
2. They will be disciplined, not littering in the school and classroom.
3. They will be responsible and cooperative in seeking to preserve the environment of the school.
4. The people in the community, the students' parents and the visitors will admire them for helping to keep the school clean.

Research Methodology

This is qualitative research which studies the outer behaviour as an individual characteristics through students thinking and considerations. Their behaviour may be the same or different, depending on the individual context that is elaborate and dynamic.

Population

There are 1,800 students, from grade 1-6, at Anubaan Chiangmai School.

Sampling

The researcher uses key informants and purposive sampling consisting of 30 students who participate in Kha Ya Boon activities.

Instruments

1. **The researcher** was one of the instruments since this research needed the close relationship between the researcher and the informants. The researcher's familiarity with

the informants was necessary before interviewing in order to get good quality information.

2. **An Unstructured questionnaire** was designed and used by the researcher to interview the student. It opened – ended question in depth interviews in order to get deep information. The questionnaire includes two points:
   - the way to cultivate students' morality through Kha Ya Boon activities including the process of activities, materials, instruments and the role of the people concerned.
   - how does the moral cultivation through Kha Ya Boon activities affect the students' thought and their behaviour change.
3. **Focus Group:** the students' parents, the teachers in Anubal Chiangmai school and the people concerned were selected to discuss the activities and how they affect the students' thought and behaviour.
4. **Recording form in the field:** This instrument was designed by the researcher to record the information from interviewing, observation and the environment concerned.
5. **Students' Daily note book**: The informants were required to note down the activities and hand it in to the teacher.

Data Collecting

1. There was a deep and unstructured interview of 30 informants about general and informal topics through social and private relationship in different occasions such as while taking relaxation and participating activities.
2. Focus Group Discussion : There was a group discussion among the representatives of the students' parents, 30 informants and 4 monks from Mahachulalongkorn Buddhist University. They all shared attitudes in the group.
3. Physical observation: The students' behaviour while taking part Kha Ya Boon activities and other activities were observed

Data Analysis

Data was analyzed at the same time of data collecting. The grouping of data was recorded in order to link its relation and reliability so that there was no any data missing. There were two points of the data concluded; the way to cultivate the students' morality through Kha Ya Boon activities and its results by liking the results of the research with its history and significance as well as the relation of moral cultivation accepted by the students, their parents, the teachers and the people concerned. The activities were in accordance with a real social way of life and the teachers and the students' parents also needed their school to be cleaned, furthermore, this encouraged the students to love to appreciate a clean environment.

Conclusion and Discussion

Conclusion

1. All students, from grade 1- 6, were given an opportunity to participate Kha Ya Boon activities as a base to cultivate their morality. Having been a member, the students were trained by the teachers and the experts on how to recycle the garbage and collect it as sanitary as possible such as using a pair of glove or a clamp pliers and they also were given a recording note book in order to note down the amount of garbage in each day.

The garbage would be transferred to points; the garbage carries one point each. Every Friday morning, on the time of paying homage to the national anthem, the name of the students who got highest points would be announced. Those students who got the points as required would get a sign sticking on their chest saying "a good child", a certificate, a free educational trip and participated the special Buddhist activities.

2. The content of moral cultivation and behaviour consists of throwing and collecting garbage, meritorious actions, recycling, sufficiency economy philosophy, 8 fundamental morality and other behaviours as the base of morality such as paying homage to the national anthem, rendering social service, being disciplined, behaving a proper manner while having meal, paying respect the teachers etc.
3. The materials used in Kha Ya Boon activities consist of a note book, the environment of the school and the materials concerned with the activities such as a dust bin, a tool for collecting garbage and a mask etc.
4. The people concerned with Kha Ya Boon activities were as follows: a master of a class, taking a role to supervise and give advice to the students, the monks from Mahachulalongkorn Buddhist University and the monks who teach moral subject played an important role teaching them to have a good attitude on keeping a place clean, being disciplined and integrated Kha Ya Boon activities with the knowledge of religion such as being honest to note down a fact report.

Discussion

1. Having participated the Kha Ya Boon activities, the students developed their behaviour reflecting that they were disciplined, honest, love to appreciate a clean environment, not litter, and realized the advantages of good actions and disadvantages of bad actions and payed more attention on environment preservation. The result showed its relation with the objectives of Kha Ya Boon activities that require the students to be well-mannered, disciplined, learning determined and to render service.
2. They had a good attitude, loved to do work, appreciated a clean place, and rendered service, being sympathetic, harmonious and a good companion among their younger and elder friends. There were 405 students, from grade 4-6, selected as V-star. The number of a good action loving network of the students was increasing day to day.
3. The school was selected as a Buddhist ways model schools and a core school of world moral revival and was funded 54,000 Baht. Moreover, the sold garbage was donated by the students for the school's cafeteria and building construction.

Kha Ya Boon Activities were accepted by the students, their parents, the teachers, the educational committee and those who concerned. It was held that the activities should be applied to other educational places.

From the study, it was found that the activities were systematically planed and designed, learning by doing. It was believed that moral study was not only from teaching but also by practicing, being absorbed by the experience. This means that learning was related with believe. If the students were taught with the right thought and values it would reflect to their moral behaviour. This was in accordance with Bandura, 1977 (referred in Chaiyaporn Witchawut, 1995. pp. 131-134) that the ways of moral cultivation could be done both direct and indirect experience, giving examples, telling the stories and providing the

circumstances supporting moral learning in order to convince the people. If the people believe in morality it will reflect to their moral behaviour.

From the main concept of the activities, it was found that there were a systematical enhancement of the students' behaviour, a proper circumstance and students' center provided and the students' decision of participating the activities emphasized. This was in accordance with the result of the research tilted "A synthesis of Thai students development on their responsibility and self discipline" of educational research Division (1999) found that the way to develop Thai children efficiency should put emphasis on learning process that focuses on students centered education through the study emphasizing on learning by experience and teaching through study centers, group relationship process, integrated learning, extra activities etc. These processes developed the students thinking, provided the highest participation of practicing and considered the environment supporting the students' efficiency.

Suggestions

1. It was found that a good way to develop and cultivate morality came from the activities' participation of the students since they had a chance to think and decide what they were interested in. They all had the ability to improve their own morality if they were properly supported. Therefore, the opportunity to learn and do activities was important for the students to develop their morality and the proper environment and circumstance were also important factors to support and attract their interest and motivation.

   If any school intensively aims to develop the students' morality, good environments such as cleaned and nice places, praising nice person to be a role model, learning material for morality and being a good and friendly company of the teachers or the personnel in that school should be done and provided since thinking, feeling and practicing must come together for moral cultivation.

2. For the effectiveness of the students' moral cultivation, there must be a clear policy of the school and it must be continuously and systematically practiced.

   Moreover, the teachers should take important role to integrate with each lesson and the cooperation with the villages, the temples and the communities and those organization concerned is also needed.

Reducing Student Indiscipline and Reviving the 'Convent Culture' through the "*Be Good, Look Good*" Program at Convent Butterworth Secondary School (CBSS)

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Abstract

This study was carried out to reduce the number of cases pertaining to student indiscipline and to revive the 'Convent Culture' at Convent Butterworth Secondary School. Findings from initial survey indicated that the school faces problems with latecomers, students playing truant from class, untidy appearance of students, and weak leadership of prefects and class monitors. Moreover, students were also not clear about what was meant by the 'Convent Culture'. The "Be Good Look Good' programme placed emphasis on aspects of the Convent Culture. The programme also involved updating the existing book on class monitoring, campaigns on 'Appreciation of Knowledge' and continuous monitoring by administrators to curb student indiscipline. The focus of this programme was on the forms three, four, and five students who were in the morning session. Afternoon session students were only involved in the "Knowledge Appreciation" campaign. This program succeeded in reviving the 'Convent Culture'. Cases of student misconducts such as being late to school and loitering along the school corridors decreased significantly. Students also obtained a better understanding of the 'Convent Culture'. Besides this, the roles of prefects and class monitors in maintaining discipline became more effective and there was good cooperation between prefects and class monitors. Continuous monitoring, cooperation between parents and teachers enabled most of the strategies implemented to succeed.

1.0 REFLECTIONS ON PAST TEACHING AND LEARNING EXPERIENCES

Convent Butterworth Secondary School (CBSS) is situated in the district of Central Seberang Perai and its location is very close to the Butterworth ferry terminal. The CBSS student intake comprises not only students from but also from other primary schools around the area, amongst them *Sungai Nyior* Primary School as well as Chinese and Tamil medium primary schools. CBSS students come from a wide range of socioeconomic backgrounds, but the majority of them come from middle and lower income groups.

'Convent Culture' refers to the code of conduct or behaviour practiced (Sheela Geetha, 2006). When nuns ran such schools, strict disciplinary control was imposed. Traditionally, a candidate for the post of principal at any Convent school must come from the ranks of former Convent pupils. This tradition was practiced so as to preserve convent culture from extinction (Chew Saw Hwa, 2006). However, based on the present situation, it is found that more and more students do not seem to care for school regulations and no longer appreciate the Convent Culture. Through observations, interviews and disciplinary records,

it was found that the main reason why students ignored school discipline was because existing regulations were not implemented with firmness.

This was becoming a serious problem and I felt that something had to be done to restore the high level of discipline and the Convent Culture of CBSS, hence, the need for this action research.

2.0 RESEARCH FOCUS

The management of CBSS had carried out various programmes, approaches and actions to raise the level of student discipline in all forms. However, a nonchalant student attitude towards discipline, ineffective monitoring, and parents who were indifferent to their children's problems had become weakening factors and a challenge to the school in its quest to realize its objectives. Moreover, the attitude of some teachers who did not practice the concept 'all teachers are discipline teachers' gave rise to problems of indiscipline among students. The situation was worsened by an environment that was not conducive to the development of admirable character and discipline.

3.0 OBJECTIVES OF THE RESEARCH

To identify the main causes of breach of discipline at CBSS.

i. To identify ideal student characteristics from the aspects of competence, discipline and personality consistent with Convent Culture.
ii. To identify actions to be taken to eradicate the problem of indiscipline.
iii. To raise students' understanding of the Convent Culture.
iv. To raise the quality of leadership and competency of Class Monitors and Prefects so as to further improve the level of student discipline.

4.0 TARGET GROUP

The target group comprised all students in Forms 3 to Form 5. The afternoon session students were only involved in the Knowledge Appreciation Programme.

5.0 RESEARCH INSTRUMENTS

Data was collected using 3 methods:
i. Observation
ii. Interviews
iii. Data from Disciplinary Case Files

6.0 LITERARURE REVIEW

6.1 Introduction

Many approaches have been utilised by the Ministry of Education (MOE) to deal with the problem of student indiscipline and mi. However, anything that the MOE might do would be meaningless if there are flaws at the level of implementation. An effective principal

would strive to make the school a safe environment, to enable students to focus their attention on learning.

6.2 Previous Research

According to a study carried out by Nor Hashimah Osman (2004) several forms of disciplinary misconduct occur frequently, such as tardiness, school truancy, long hair, class truancy, smoking, improper behaviour, fighting, obstinacy, disturbing teaching and vandalism of public property. As a big portion of student time is spent at school, the school management ought to look for ways to overcome the problem of discipline and to inculcate noble values amongst students. The school should not give external factors as excuses as to why there are discipline problems at their school.

According to studies conducted in USA, schools associated with discipline problems are as follows:

i. Schools do not have clear rules and regulations and do not mete out consistent or just punishment to students.
ii. Students no longer trust the law.
iii. Teachers and administrators do not know school regulations or do not agree on the action taken against students.
iv. Cooperation between teachers and administrators is poor.
v. Teachers do not exhibit satisfactory behaviour.
vi. Schools are too big and do not have adequate resources for teaching and learning (Mohd. Ismail Othman, 2006).

Many newspaper headlines give reasons as to why there are discipline problems amongst students. Amongst them are:

i. Armchair teachers need to face reality.
ii. Tight discipline makes students rebel.
iii. Parents are the reasons for hooliganism.
iv. The school climate is amongst the source for discipline problems.
v. Teachers and schools are the cause of discipline problems.
vi. Value changes are reasons why student discipline deteriorates.
vii. Students imitate violent film scenes on TV.
viii. Bad children: Blame yourselves.
ix. Human values are fading.
x. A Better Deal For Boys

From the newspaper headlines, it is apparent that there were those who blamed teachers for the deteriorating level of discipline among children, some pointed the finger at parents, while others stated that television and the deterioration of human values are the main causes of student indiscipline (Mohd. Ismail Othman, 2006).

In order to raise the level of academic excellence, besides the concerted efforts of the school and parents, diligence and dedication, school students must have a clear concept of the reason why they are attending school, besides disciplining themselves with the rules set by the Ministry of Education. This is to make it easier for all students to gather knowledge in a conducive environment besides being able to mix convivially. Should there be

students who go to school merely to waste time with no clear purpose, then most probably they will be disturbing other students (Mohd. Ismail Othman, 2006).

According to Dr James Ang Jit Eng (2005) several strategies can be implemented to cope with the problem of school discipline, as described below:

Providing Interesting, Relevant, and Appropriate Instructions
According to Davis (1974), a lesson that is prepared carefully and presented by a teacher who is well-prepared and able to attract student attention can prevent student misbehaviour in class. Kounin (1970) in his study found that factor determining the effectiveness of classroom management is the ability of the teacher to prepare and handle lessons. The teacher who can do this successfully will lessen the occurrence of behaviour such as inattention, borednessand other disciplinary problems.

Establishing Classroom Routine and Procedures
It is suggested that a teacher gives clear explanations about daily activities and her expectations when meeting students for the first time in class. This act is considered the most important in the attempt to nurture classroom management.

Giving Clear Directions
Long and Frye (1977) are of the opinion that a clear and concise pattern of directions is basic to nurturing desirable behaviour. Others are of the opinion that directions should be straight to the point and arranged in suitable order (Howell & Howell 1979).

Employing Effective Movement Management
Effective movement management refers to the ability of teachers to steer students from one activity to another smoothly and competently. Bothe these abilities are important to prevent the occurrence of misbehaviour amongst students as students will not have the time to do undesirable things.

Utilizing Interest Boosting
Exhibiting her deep interest is one way for a teacher to show deep interest in student activity when students start to show signs of boredom or lack of attention. The teacher might move towards the student when the student first showed signs of boredom or loss of interest. The teacher might move towards the student involved and watch her activity, show appreciation of her effort and make suggestions for further progress. This strategy can ensure that student will always focus her attention on tasks given and will prevent the occurrence of misbehaviour.

Planning and Modifying the Classroom Environment
This strategy involves arranging furniture, arranging student seats appropriately, providing a reading corner, an attractive notice board, and ensuring the classroom is clean.

Restructuring the Situation
Teachers wishing to use this strategy need to choose easy cues—one or two words (at most)—to begin a new activity or to cause an old activity to be done in a new way. For example, when a teacher realises that her student is showing signs of uncertainty and boredom towards the lesson delivered, she could ask the student to stand and stretch her muscles before continuing on with her teaching.

7.0 PILOT STUDY

The following data results from examination of discipline records, observation of the current situation and interviews with the Principal, Senior Assistant of Student Affairs, Senior Discipline Teacher, teachers and students of CBSS. The data is presented below:

7.1 Lack of Understanding of the Convent Culture

There are students and even teachers who do not know what is meant by the Convent Culture. This culture is very important and is related to the history of the establishment of the school and should be perpetuated at all times.

7.2 Ineffective Role of the Class Monitor

The authority of the class monitor is given less prominence than the authority of school prefects. The role of the class monitor in controlling student discipline in class was found to be ineffective.

7.3 Disorder during assembly

During daily and weekly assemblies, there were students and classes that did not move or assemble in neat lines and rows. There were also students who were noisy during assembly.

7.4 Disorderly movement along stairways

Movement along stairways too should be improved as the stairways are narrow and student movement up and down the staircases ought to be controlled so that everyone will be safe when going up and down the stairs.

7.5 Disorderly student movement

Students do not line up and move as an ordered group when going to the laboratory and so forth. They go in groups or alone and there are some who line up, while the rest are scattered.

7.6 Inappropriate Haircut

There are ‘hard core’ students who do not have their hair cut to set regulations. If this is not curbed, their behaviour will influence other students.

7.7 Lack of manners

According to the Principal, he had hoped that students would practice more courtesy when dealing with their teachers.

7.8 High Level of Tardiness

There were students who were always late to school, citing all kinds of excuses such as sleeping-in and delays caused by their family members and the public transport (bus).

7.9 Student loitering along corridors

There are also students who liked to be out of the classroom, especially in between classes, merely to hang around. They grab the chance to chat outside the classroom before the teacher for the next period gets to the class.

7.10 Students frequenting the staff room

Students often enter the staff room for various reasons such as to meet teachers, to carry out set tasks using the computer and so on. Sometimes too many students enter the staff room, making some of the other teachers uncomfortable.

7.11 Prefects who lack leadership qualities

Prefects with weak personalities cannot be firm enough to be effective in carrying out their duties. There are also amongst them those who are reluctant to criticise other students for fear of being unpopular.

7.12 Disorderly movement of afternoon session students

At noon, the CBSS atmosphere becomes noisy, with the arrival of afternoon session students. As the school grounds are not spacious, students would gather at places such as the canteen area and the co-curriculum court. Furthermore, there are also morning session students who would grab the opportunity to slip out of classrooms to chat with afternoon session students. The presence of these morning session students is sometimes difficult to detect because they would mingle with the afternoon session students.

8.0 THE MAIN REASON FOR STUDENT INDISCIPLINE AND THE DECLINE OF THE CONVENT CULTURE AT SMKCB

8.1 Disciplinary Actions That Do Not Scare

Students have no qualms about committing disciplinary misconduct, when finding out that the punishment meted out would not inconvenience them too much. For example, when they come to school with inappropriate hairstyles, their punishment was to wear a scarf or be given points of demerit. They were also not worried about how many points of demerit they had accumulated from a variety of misdemeanors because no firm action, such as suspension from school, would be taken.

8.2 The Lack of Monitoring

Lack of monitoring of student behavior has also contributed to the rising number of disciplinary cases in school. Students did not feel that their ‘crime’ was being watched. Besides that, there were also teachers who did not show concern for discipline matters and placed the responsibility totally in the hands of the discipline teacher.

8.3 Parental Attitude

There were parents who would, almost daily, send their children to school late even when they knew that action would be taken against them in the form of demerit points.

8.4 External Influences

Students often compared the rules they had to follow (in CBSS) with students from other schools. When they found that students from other schools could sport certain hairstyles, paint their nails and wear all kinds of shoes, they felt they could do the same.

8.5 Student Attitude

Student attitude which made them feel that discipline was something difficult to comply with also caused them to flout school rules that seemed to constrain them.

8.6 Convent Culture Not Practised

Some students who enroll in Form 1 are not from Convent Butterworth primary school. They come from different primary schools in the area, therefore the convent culture is totally alien to them and find it difficult to embrace a totally new culture.

9.0 IMPLEMENTATION OF THE PROGRAMME

The ***"Be Good, Look Good"*** programme was launched so that action could be taken to rectify the current situation. Amongst the contents of the programme are as follows:

9.1 Broadcasting of *"Be Good, Look Good"* Campaign

Attractive banners and flyers to attract the attention of the whole school to the program were put up all over the school.

9.2 Talks on Convent Culture

Interesting talks were organizaed with participation from various parties. Exemplary student behaviour in line with the Convent Culture was recorded and played back to the rest of the students. The history of the founding of CBSS was made known so as to be appreciated by the students.

9.3 The Role of Class Monitors and Prefects are Expanded

Prefects and Class Monitors were given special briefings on the active roles they can play to monitor student discipline especially during the following activities:

i. School assemblies
ii. Orderly movement up and down stairs
iii. Lining up before walking to laboratories and so on
iv. Haircuts according to regulations
v. Greeting teachers

vi. Recording student movement in and out of the classrooms

9.4 Coming to School Early Campaign

Besides the role of the Discipline Teacher and Prefects, parents too were invited to join the campaign. Parents of students with a record for being late to school were invited to school for discussions.

9.5 Monitoring and Patrolling by Management

Monitoring schedule is made available and administrators made frequent patrols around the school.

9.6 Entering the Staff Room

Students were not allowed to enter the staff room without permission. They had to wait outside the room until the teacher they wanted to meet came out of the staff room to meet them.

9.7 Praise and Motivation

Praising students individually and collectively (as a class) led to improved behaviour.

9.8 Knowledge Appreciation Program

Afternoon session students were assembled at the School Hall and the *Anjung Minda* (behind block C) and were asked to read their own reading material.

10.0 DATA ANALYSIS

10.1 Understanding of the Convent Culture

During the speech for the *"Be Good, Look Good"* campaign, I found that students were very attentive. This was due to the meticulous preparation made including video-recording scenes of students in action, which were then shown on screen. Over all, a random survey of students conducted by the discipline teacher and I, found that students were satisfied with and understood what was meant by Convent Culture. They also promised that they would try to emulate the examples shown to them and comply with regulations. Only when I presented the hairstyle issue did some "hard core" students show signs of dissent.

10.2 Role of Class Monitor

As a result of frequent meetings with the Class Monitors and Assistant Class Monitors, I found that the *"Be Good, Look Good"* programme succeeded in initiating obvious changes in the responsibility of the class monitor and Assistant class monitor. Orderly student movement showed that they had succeeded in fulfilling their responsibilities. Fewer incidents of students loitering along corridors showed that the class monitors and assistant class monitors had played their roles effectively.

10.3 Tidy and Quiet Assemblies

One of the early results of the *"Be Good, Look Good"* campaign was the obvious changes during assemblies. These resulted from continuous monitoring as well as the guidelines given to the Head Prefect and the Deputy Head Prefect on the proper way to conduct assemblies**.** Some teachers were even "shocked" when for the first time, the Head Prefect bowed her head in respect in their direction and greeted them before starting the assembly. They said that before this the Head Prefect would start without acknowledging their presence. Teachers also commented that the Head Prefect and the Deputy Head Prefect had handled the assembly efficiently.

The two Prefects on duty to watch the classes were also given the task of supervising that the rows of student were straight and that the students were not noisy. These prefects would stand, one at the head and the other at the tail end of the class they were assigned to monitor. Students who flouted the 'keeping-quiet' rule were escorted out of the hall. **This made the hall noise-free and students walked back to their classrooms in an orderly manner.** Noisy classes were detained in the hall until the noise level subsided.

10.4 Movement along stairways and to special rooms

For stairway movement, students were not allowed to use the stairs if they did not line up neatly. Prefects posted at the stairways were told to be firm with stubborn classes. **As a result stairway movement was smooth and tidy.** The campaign also succeeded in maintaining order when students were moving from their classrooms to to special rooms such as the laboratory or workshops.

10.5 Hair Tidiness

After much advice and persuasion, many of the 'hardcore' students began to show positive changes by grooming their hair. The really stubborn ones were forced to wear head scarves to cover their hair. However, the wearing of headscarves was not effective as students would wear them only in the presence of certain teachers. There were also 6 students who agreed to have their hair cut so that they no longer had to wear scarves.

10.6 Greeting teachers

After the *"Be Good, Look Good"* campaign, students began to give greetings in the manner prescribed. In the weekly meetings with the class monitors, I would make sure that it was truly implemented in class. I would also ask teachers about the developments in class. It was found that there were students in 2 of the classes who refused to cooperate, in the beginning. After instructing the class monitor to report the names of students who refused to cooperate, everything went smoothly.

10.7 Punctually

After the launch of the *"Be Good, Look Good"* campaign in February, the number of students who were late to school fell to 120 cases. In March, the figure fell to 88 cases. The main factor contributing to this reduction is that towards the end of February and at the beginning of March, the Principal and the Senior Assistant of Student Affairs contacted, by

phone, the parents of students who were late on more than 5 occasions. Some parents were also asked to come to the school to discuss the issue with administrators. As a result, the parents began to follow-up on the matter and started sending their children to school early. However, in April, the number of cases increased again to 162 because no follow-up calls were made to parents because the school management was busy preparing for another event in school, the school Canteen Day. Although in June the figures dropped again to 122 cases, this still exceeded the March figures. Overall, the *"Be Good, Look Good"* campaign was still considered successful because there was a reduction in the number of cases (333 cases in January and 122 cases in Jun). Figure 1 shows this difference in number.

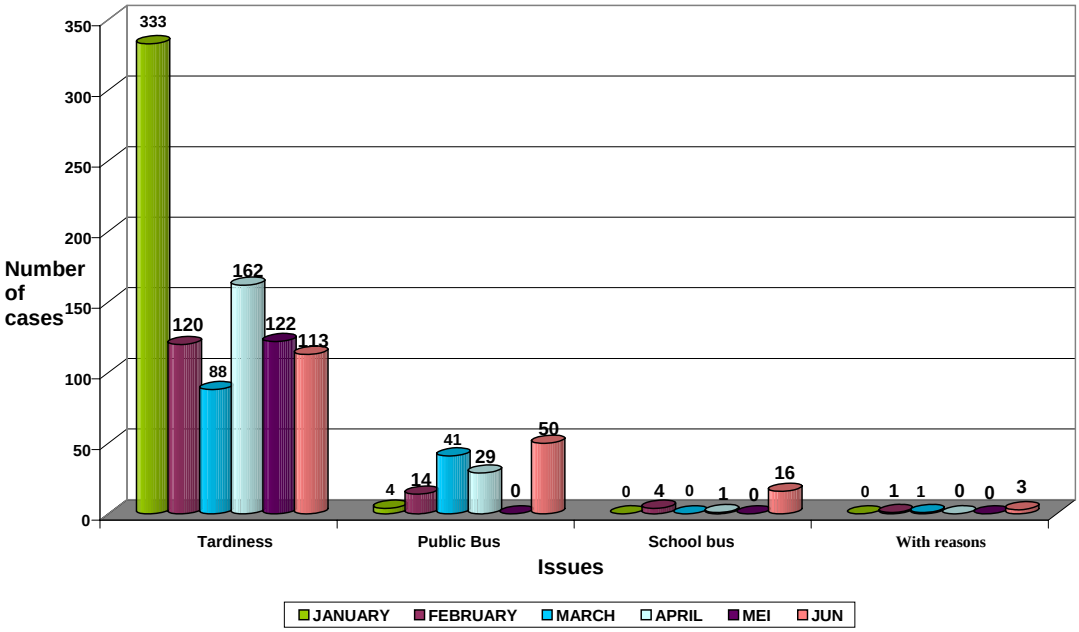

Figure 1 Analysis of late arrivals to school -January to June 2007

10.8 Student movement along corridors

In order to find out whether the *"Be Good, Look Good"* programme had any effect on the problem of loitering, I conducted a research on student movement outside classes during the 3rd and 7th periods, respectively, in Block B. I chose Block B because students could not see me monitoring them as the glass door of the staff room wa tinted. I could not conduct a research in Block C because there was nowhere to "hide" from students. I chose certain days and weeks of the month to observe the students. The sign "M1" in Figure 2 refers to Week (*Minggu*) 1 and so on. On exam week, I did not conduct the research as most of the students remained in class.

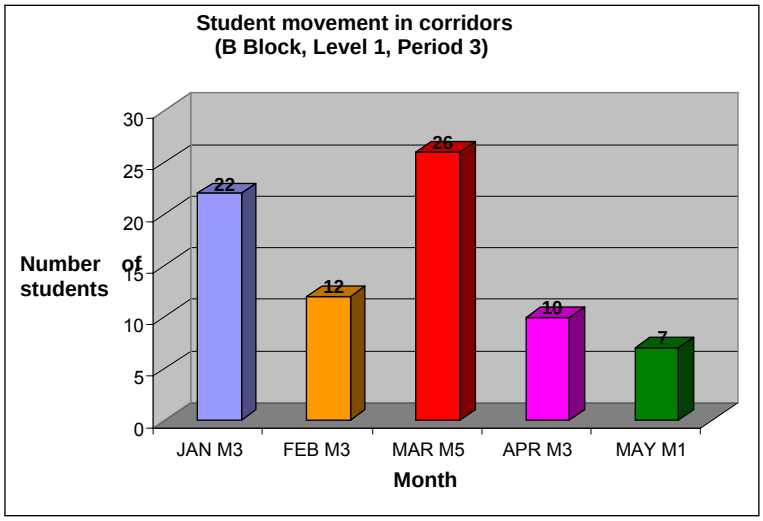

Figure 2 Student movement along corridor (B Block, Level 1, Period 3)

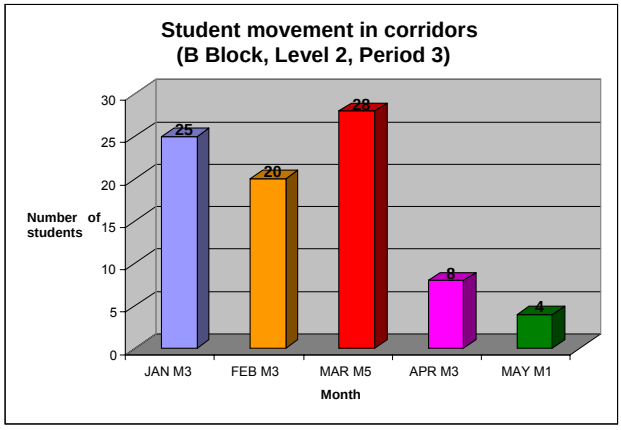

Figure 3 Student movement along corridor (B Block, Level 2, Period 3)

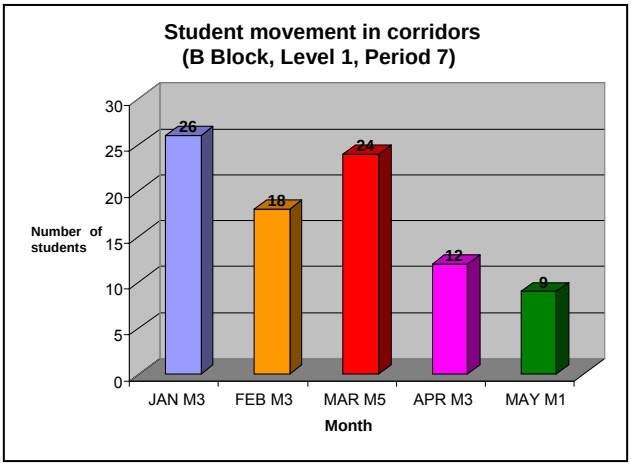

Figure 4 Student movement along corridor (B Block, Level 1, Period 7)

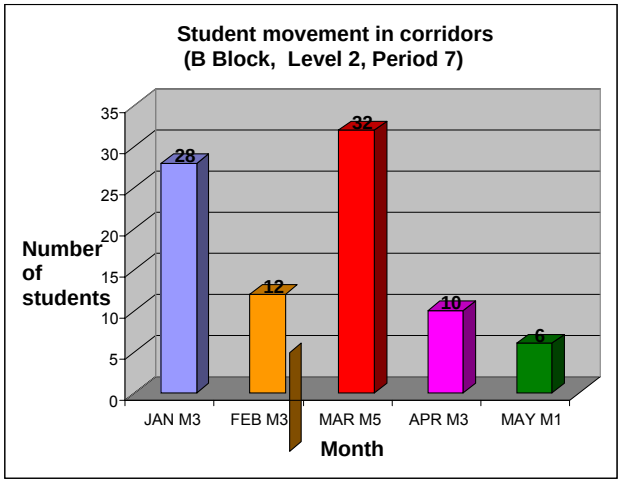

Figure 5 Student movement along corridor (B Block, Level 2, Period 7)

After the *"Be Good, Look Good"* campaign, the total number of students loitering outside classrooms in January decreased significantly. All four graphs regarding student movement along corridors showed the same trend, recording the highest total number of student movement in March. The main reason why there were so many students loitering along corridors was because the management was busy preparing for Canteen Day.

In March, the Principal was out of school, attending courses. The Senior Assistant of Administration who took over the administrative duties could not carry out frequent patrolling as scheduled. This enabled students who liked to flout rules to take the opportunity to leave the classroom.

Analysis also showed the tendency for more students to leave classes later in the day, during the 7th period. I would like to suggest that administrators patrol the whole area more frequently during the 7th and 8th periods to prevent students from loitering outside their classrooms. However, conditions began to improve by the third week of April because there were more monitoring efforts by the management. The situation continued to improve in May as both students and teachers were busy preparing for the mid-term examinations.

10.9 Students in Staff Rooms

Effort to reduce student movements to and from the staff room was less successful because most teachers did not give their cooperation. The situation changed only at the beginning after a notice was placed in front of the staff room. However, conditions reverted to normal after that.

10.10 Competent Prefects

I found that SMKCB prefects could work well but needed continuous monitoring. As a result of frequent meetings with these prefects, they became more efficient in carrying out their duties. As a result, students were quiet during assembly.

10.11 Orderly Session Changeover

Afternoon session students appeared to be more polite and orderly when they were required to stay in a set area and to read their own reading material. The campaign succeeded in reducing noise among afternoon session students

11.0 RESEARCH REFLECTION

The activities carried out through the "Be Good, Look Good" programme succeeded in achieving its objectives. Amongst the factors contributing to the success were the interesting talks and campaigns which were organized for the students, as well as the strong cooperation between the administrators and the academic staff of the school. Most importantly, the success of this programme was due to the constant monitoring efforts which were conducted by all members of the administration as well as the academic staff.

12.0 CONCLUSION

The management, especially the Principal, is the most important party to determine the direction of student discipline. The belief of teachers and students alike in the implementation of disciplinary rules and actions would have to be perpetuated because without that belief, disciplinary rules would merely be a meaningless piece of document. Interesting and effective teaching and learning strategies in class would also help keep student indiscipline at bay. Ideally the school would have a definite motto to provide motivation and the school's aims should be understood by every member of the school community. The school management should avoid activities that waste time such as prolonged assemblies. Instead, more time ought to be allocated to meaningful activities such as reading. The role of class monitors and school prefects should be explained to the rest of the students and the management ought to make them a group respected by all students. The Ministry of Education and State Department of Education should appoint really suitable persons to head the school so as to maintain the school culture.

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The Effects of Using an Instructional Model Using a Problem – Based Approach for the Development of Mathematics Knowledge and Mathematics Process of Matthayomsuksa Five Students of Kanchanapisekwittayalai Phetchabun School

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Abstract

The Purposes of this research was to develop the instructional model using a problem – based approach and to study the effect of implementation's the instructional model using a problem – based approach on students' learning achievement and five mathematical processes, namely problem solving, reasoning, communicating, presenting and connecting process. The population of the study were 98 Mattayom Suksa 5 (Grade 11) students at Kanchanaphisek Wittayalai Petchabun School educational region 2, Petchabun province, who were studying in the second semester, academic year 2008. These students were selected from three classrooms and the sample of this research were 34 Mattayom Suksa 5 students from one selected classroom of Kanchanaphisek Wittayalai Petchabun School educational region 2, Petchabun province who were studying in the 2nd semester, academic year 2008. The sampling method was used by considering a classroom as one unit. The data was analyzed by percentage, mean and standard deviation.

The research discovers:
The instructional model using a problem – based approach consists of six steps, namely, 1) problem presenting, 2) individual studying, 3) group discussing, 4) solution presenting, and 5) knowledge summarizing and 6) problem expanding.

1. The students who learned with the instructional model using a problem – based approach had learning achievement scores above the criteria score with statistical significance at 0.05.

2. The students who learned with the instructional model using a problem – based approach had the five mathematical processes scores above the criteria score with statistical significance at 0.05.

Background

Mathematics plays a highly significant role in human thought development, enabling them to think creatively, logically and systematically as well as analyze problems and situation thoroughly and accurately. In other words, mathematics enables human to predict, plan, make a decision and solve the problems appropriately and accurately. Besides, it is used as an indispensable tool in studying science, technology and many related fields. Mathematics can develop human to their full potential with balances in mind, intellect, emotion and being a good citizen who can get along with other members of the society (Ministry of Education, 2002:1). It makes human reasonable, eager to learn and eventually able to create

new things so it is considered the foundation of technologies. Therefore, the increase of mathematical potentiality is necessary. The goal of a basic education is to include mathematics into the basic education curriculum to ensure that students have understanding in this subject enough to other subjects well.

Although the mathematics curriculum of the National Education Act B.E. 2542 and the Amendments (Second National Education Act B.E. 2545) places an emphasis on learners' development in terms of academic achievement, skill/process and desirable characteristics, the mathematics teaching and learning is still not able to achieve the goals on learning achievement and mathematical process per se.

According to the literature and related research, the standard of curriculum and assessment plan of mathematics published by the National Council of Teachers of Mathematics (NCTM, 2000) emphasize that students' learning must really take place. That is, students must create, expand and conceptualize their thoughts with interaction to real contexts, instructional materials, and their peers. This truly corresponds with the constructivist learning theory and the co-operative learning theory. Those learning theories are rooted on the problem-based learning. This problem–based learning, according to Wikerson and feletti (1989), has three steps: 1) facing problem 2) encouraging individual study 3) reviewing the solutions. One of the highest goals of problem-based learning is to encourage students to think analytically and critically which eventually can instill the sense of self-confidence and skills in facing problems or obstacles. Another goal of the problem-based learning is to create the sense of responsibility in learning by which their role has been changed; from knowledge recipient to knowledge constructor.

From the reasons mentioned above, the researcher, as a mathematics teacher, was interested in developing the instructional model using a problem – based approach based on the problem-based learning, the constructivist learning theory and the co – operative learning to encourage and provide opportunity for students to think. This approach will consequently results in students' learning achievement and their mathematical processes.

Purposes of the Study

1. To develop the instructional model using a problem – based approach
2. To study the effect of implementation's the instructional model using a problem – based approach on students' learning achievement and five mathematical processes, namely problem solving, reasoning, communicating, presenting and connecting process.

Research Hypotheses

1. The students who learned with the instructional model using a problem –based approach had the learning achievement score above the criteria score, 75 percent, with statistical significance at 0.05.
2. The students who learned with the instructional model using a problem –based approach had five mathematical processes score above the criteria score, 75 percent, with statistical significance at 0.05.

Theoretical background

The problem-based learning was first used in the teaching of medical students at McMaster University in Canada by Barrows (1980) and Tamblyn (1989) who defined the problem-based learning as learning from working, a process through which students gain knowledge and understand, and have skills in solving problems. The problem is the first thing students encounter in their learning process which makes this teaching approach differs from others. The goal of the problem-based learning is to encourage and promote students' analytical and critical thinking which also can develop their self esteem and problem solving skills. Another goal is to change the students' role from passive learners to active learners who explore to construct their own knowledge. This can be achieved by instilling the sense of responsibility of their learning.

The instructional model using a problem – based approach developed by the researcher is the learning model whose emphasis is placed on the problem solving, encouraging students to apply their existing knowledge and prior experience to real life situation. There are six steps as follows:

Step 1 Problem presenting: In this step, students can present pattern or representative problem from the open-ended problem with multiple answers or solutions.

Step2 Individual studying: In this step, students can learn to plan, check the general structure of the answer, and find solution according to their knowledge and understanding independently.

Step3 Group discussing: Students bring their own problem to the group to discuss. They will communicate and exchange ideas, collaboratively perfecting the solution. The collaborative learning helps develop students intellectually and socially.

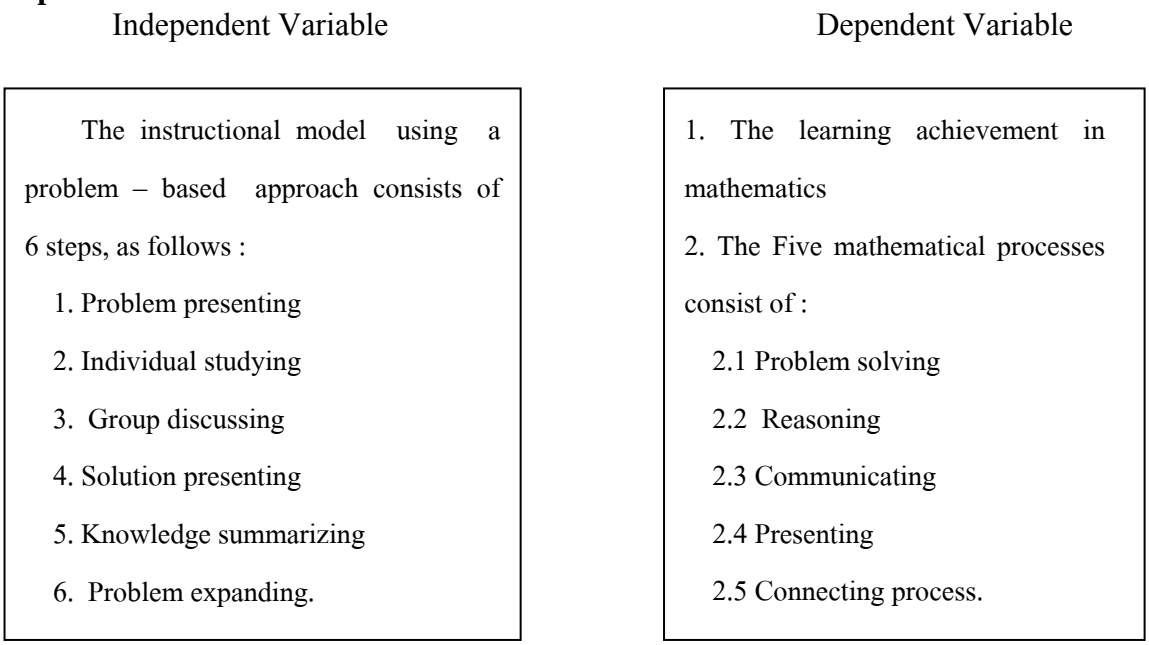
Step 4 Solution presenting: Each group chooses its best solution to present to the class. In the presentation they have to use their own words, formula and write symbols to communicate with their peers. This activity practices students to be self confident, self-assured, responsible and systematic.

Step 5 Knowledge summarizing: They have to conceptualize what they have learned from the group activity and class presentation. Each student has to write his/her own summary.

Step 6 Problem Expanding. Students are practiced to think flexibly, initiatively, out of the box, and fluently to solve the open-ended problem which is expanded by the teacher. The conditions of the problem can be added or reduced.

Apparently, one of the most important aspects of the problem-based approach is to situate a good problem which can be defined as one has various solutions or answers in order to make it practical, challenging, and encourages for students' thinking. A good problem also should be a problem which requires a team rather than an individual to solve. This idea corresponds well with expected learning outcome, and thus, it should develop the Bloom's taxonomy of learning domains higher achievement of the students.

Conceptual framework



Picture 1 The conceptual framework of this study

Scope of the study

Population and Sample

Population of the study were 98 Mattayom Suksa 5 (Grade 11) students at Kanchanaphisek Wittayalai Petchabun School educational region 2, Petchabun province, who were studying in the second semester, academic year 2008. These students were selected from three classrooms.

The sample of this research were 34 Mattayom Suksa 5 students from one selected classroom of Kanchanaphisek Wittayalai Petchabun School educational region 2, Petchabun province who were studying in the 2nd semester, academic year 2008. The sampling method was used by considering a classroom as one unit.

Studied variables

Independent variable: Learning using the instructional model using a problem – based approach

Dependent variables: 1) The learning achievement in Mathematics

2) The five mathematical processes, namely, problem solving, reasoning, communicating, presenting and connecting process.

Research Method

1. The researcher reviewed literature and related document to study the constructivism learning theory, the problem-based learning instructional model in mathematics and related factors including concepts on assessment and evaluation of learning achievement, and mathematical process.
2. The instructional model using a problem – based approach was drafted by the researcher. This approach consists of six steps: problem solving, individual studying, group discussing, solution presenting, knowledge summarizing, and problem expanding.
3. After that, the instructional model using a problem – based approach was verified and evaluated the appropriateness, possibility and accuracy by three experts. The results of the approach evaluation shown that this approach was appropriate and situate for implementation.
4. The samples who were 34 Mattayom Suksa 5 students from one classroom at Kanchanaphisek Wittayalai Petchabun School were selected by the researcher. These students were studying in the 2nd semester of academic year 2008.
5. The researcher introduced students to the instructional model using a problem – based approach and suggested about their role in learning by this approach.
6. The supplement course based on the instructional model using a problem – based approach was implemented with the sample students by the researcher. The researcher had taught the sample students an introduction of graph theory in mathematics course, elective course, for 18 periods, 50 minutes each.
7. At the end, the post-test of the learning achievement and the five mathematics processes were administered to the sample students who took part in the implementation
8. The gathered data were statistically analyzed by using SPSS software to test the research hypothesis.

Data Analysis

1. Analysis of the learning achievement and mathematical processes was done by percentage, mean and standard deviation.
2. The research hypothesis that students who learned with the instructional model using a problem – based approach would have higher learning achievement scores and mathematical processes scores than the criteria score (75 percent) was tested by using the data collected after the implementation ended.

Conclusion

The findings are as follows:

1. The instructional model using a problem – based approach consists of six steps, namely, 1) problem presenting, 2) individual studying, 3) group discussing, 4) solution presenting, 5) knowledge summarizing and 6) problem expanding.
2. The students who learned with the instructional model using a problem – based approach had learning achievement scores above the criteria score with statistical significance at 0.05.

3. The students who learned with the instructional model using a problem – based approach had the five mathematical processes scores above the criteria score with statistical significance at 0.05.

Discussion

1. The instructional model using a problem – based approach developed by the researcher is the instructional model which focuses on problem-solving process. It aims to practice students to be able to apply their knowledge, ability, ideas, and experience to the daily life situation. There are six teaching steps, namely, 1) problem presenting 2) individual studying 3) group discussing 4) solution presenting 5) knowledge summarizing and 6) problem expanding. This teaching approach corresponds well with the section 24 of the National Education Act B.E. 2542 and the Amendments (Second National Education Act B.E. 2545) which states that in organizing the learning process, educational institutions should develop instruction with learning activities for learners to practice their thinking process, and ability to face and apply their knowledge for preventing and solving problems. The learning activities should draw from real life situations and drill in practical work for complete mastery; enable learners to think critically, and solve problem as well as acquire the reading habit and continuous thirst for knowledge.
2. The students who learned with the instructional model using a problem – based approach had learning achievement scores above the criteria score with statistical significance at 0.05. It means that students learning with this approach understood and were able to apply their knowledge to various situations. This is because students were provided chances to solve the problems brought to class by their teachers. This results is similar to that of the research by Pehkonen (1997) and Bay (2000) which state that problem-based learning can develop students' cognitive and make them have higher scores in learning achievement than their peers who learned by traditional approach. They also pointed that the problem-based learning helps students achieve the higher learning achievement score. Similarly, Korenman & Shipp (1994) believed that this approach is so successful because students get hands-on experience; therefore, they can create and adjust their knowledge structure. Students are believed to be more eager to learn and visit such learning sites as libraries and internet.
3. The students who learned with the instructional model using a problem – based approach had the five mathematical processes scores above the criteria score with statistical significance at 0.05. This result is similar to Inprasit's research (2003) which states that a open-ended problem activity can be used for students' thinking and mathematical processes development. This is because the problem-based learning and constructivism learning theory make students face the problem and construct the knowledge on their own. During this stage, since students have to think individually, discuss in the group, and collectively make a decision, their communication skills, be it speaking, writing, using symbols and pictures are better. They are trained to present their work to the class in a logical way, connecting their existing experience with the new one. In conclusion, the reason the instructional model using a problem – based approach helps develop the five mathematical processes in students is that students are capable of finding various answers.

Research Benefit

1. The instructional model using a problem – based approach is considered as an innovation in teaching for mathematics teachers. This approach is a student centered approach which emphasis is place on students.
2. Teachers can use this approach with other mathematics and subjects to enhance and develop students' thinking skills.
3. The instructional model using a problem – based approach can develop students' creative and systematic thinking skills. Students are able to analyze problems and situation accurately and thoroughly, then making them predict, plan, make a decision and solve a problem accurately and appropriately. They are also expected to be a happy team worker developing various mathematical processes.

Suggestion

1. Suggestion for implication
   The instructional model using a problem – based approach should incorporate the following factors as guidelines in teaching.
   - 1.1. Students should be developed to be autonomous learners who can connect various existing experience and prior knowledge together. They should be encouraged to think and solve problem critically, especially with multiple solutions in mind. Also, they should be trained to think independently and be able to communicate to others in a logical way.
   - 1.2. Students should be enhanced to work as a group. They should be allowed to show their potential in presenting their ideas and exchange them within group. In other words, it is a collaborative learning.
2. Suggestion for further research
   - 2.1 There should be a study in mathematical processes including the creative thinking from using the instructional model using a problem – based approach.
   - 2.2 There should be a study in the desirable characteristics, derived from the instructional model using a problem – based approach

Enhancing the Acquisition of Skills in the Application of Colouring Techniques as Similar to Symbiosis

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Abstract

The research was conducted to enhance students' skills in applying the colouring technique similar to the process of Symbiosis. The collaboration of various techniques and two-way art, i.e. visual and audio art were used. Without informing the Form 5G students, the research was conducted on 32 of them. The Problem statement was formulated based on the observation, discussion and practical work. Observation was confined within the classroom and during several informal meetings with the students. Inadvertently, they were also exposed to the colouring technique: i.e. experiment and observe. They started colouring using their fingers as in the Neolithic age. In phase Two, they were introduced to other mediums such as the brushes, palette knives, sponge and texture medium of art. 5 months later, they showed slight improvement. I knew the knowledge that they have gained would help to raise their performance especially in the forthcoming Malaysia Certificate of Education (SPM). Even though I only succeeded in drawing the attention of 35% of the students, 25% were able to better understand the concept of colour and have shown interest to explore colouring techniques. While another 40% have even bought their own colouring tools as an indication that they were willing to give their commitment to work harder. I believe that this research is able to help more students to acquire the techniques of colouring, with the commitment and patience of the Visual Art Education teachers.

1.0 A REFLECTION OF THE TEACHING AND LEARNING EXPERIENCE

Experts have discovered many potentials of innovative thinking among our abilities to think by using images. Men use their visual ability to think innovatively and it has become the basis of thinking, in the process of interacting and understanding thinking. These visuals often give rise to radical innovation.

I found that colouring is the main problem that my students faced, compared to drawing or sketching. Albeit I could understand their frustration, anxiety and apprehension during examination, I personally feel that colouring gives me a great sense of tranquillity and contentment.

In my opinion, creativity is when one perceives everything from a new dimension and perspectives. Thus, I believed that I have to find a method that can assist my students, who have the interest but lacking the ability in the realm of visual arts. I discovered that 90 percent of my students faced problem in colouring, while 70 percent were ignorant of the techniques in using the various medium of art and another 60 percent admitted that their

weaknesses was due to lack of practice. Furthermore, findings of the PATS research itself have proven that most students were weak in acquiring the colouring technique.

I found that students' knowledge, understanding and perception of visual arts were low, besides the inability to see the relationship of art in daily lives with the process of learning in classroom.

'*The greatest asset of any nation is the creativity of its people.'*
Tun Dr.Mahathir Mohamad

The interest in using colours, lines and designs expressively and symbolically as in the works of Van Gogh, Gaughin, Tuan Syed Ahmad Jamal and Ibrahim Hussein, and many other famous artists, have produced priceless paintings.

Colour is produced from the mixture of various pigments and refractions of light on a surface. Colours can be used to convey feelings. Many artists have studied and tried to understand the theory of *'colour is light and light is colour'*. Fauvism is the usage of colour without boundaries. The density or fullness of colours was also internalized. Local artists such as Ibrahim Hussein, Khalil Ibrahim and Jalaini Abu Hassan have explored space and dimension which are translated into their works in vibrant colours.

'Creative activity increases creative ability'.
Harry Lorayne

Based on the observation and findings which I have gathered, it has evoked a feeling of enthusiasm in me to help my students to be more aware and appreciate colours and arts. This group of students have been under my observation since 2007. They have shown great interest after I had conducted discussion with every single one of them and that I would give them intensive support. Reinforced by this drive, I am determined to help these students in acquiring the colouring technique as in symbiosis in the visual arts.

2.0 FOCUS OF RESEARCH

Through interview and discussion with my students, I realized that they were unable to obtain good grades in Arts because they lack awareness of careful study and internalization of visual arts. Moreover, their intensive practice as well as exposure to the range of medium and tools used in arts was very little. I learned that the students' skills in using the various medium and tools can be enhanced by having a complete and fine sets of drawing tools and equipments. Thus, greater emphasis on the importance and interest in the subject would encourage students to start owning the tools at the beginning of the year or at least two months before the 2611/2 SPM Arts examination.

Moreover, the students were insensitive, less responsive and less appreciative towards the aesthetic values and development of media technology. Nevertheless, given proper nurturing and emphasis, the visual arts subject will be perceived pragmatically and aesthetically.

3.0 OBJECTIVES

3.1 General Objective

The general objective of this study is to increase awareness on the importance of mastering the colouring technique to raise students' confidence and understanding in visual arts.

3.2 Specific Objective

The specific objectives of this study are:

i. To improve students' colouring skills
ii. To instil aesthetic values of visual art among students

4.0 TARGET GROUP

32 students of 5G, Serendah Secondary School 2008

5.0 RESEARCH IMPLEMENTATION

The research started in April 2008 and was completed in November 2008. In order to avoid uneasiness among the students, teacher would observe students' performance in the class without knowing that they are involved in a research. Thus, the research equipment/ tool were given in the form of weekly exercises to maintain a precise and concise research outcome. A pre and post-test were carried out to measure students' competency and performance. Meanwhile feedback from students was done through classroom discussions.

6.0 PROBLEM STATEMENT

In his book *Introduction to Painting & Drawing*, John Henn (1986) stated that it was a mistake to think of colour as a separate component of drawing and painting. Understanding colour is an integral part of the whole business of learning to see and learning to register what you see.

According to John Raynes (1982), looking at a three-dimensional image or an image in one's mind's eye and representing it by two-dimensional drawn shapes requires some skill and almost every beginner feels this skill to be paramount. It is useful, it can be inborn and it can be developed but beyond a certain minimum, manual dexterity is not the most important factor in learning to draw.

My main responsibility is to overcome the students' problem which is stimulating creativity from their subconscious minds. They underestimated their own capabilities and deemed that an art is for the talented ones. The students were very enthusiastic about arts and realized its importance in their daily lives but inferiority hindered them from drawing and painting.

7.0 ANALYSIS

As seen in the graphs of the pre test below, many students' were only able to score at an average grade while most failed.

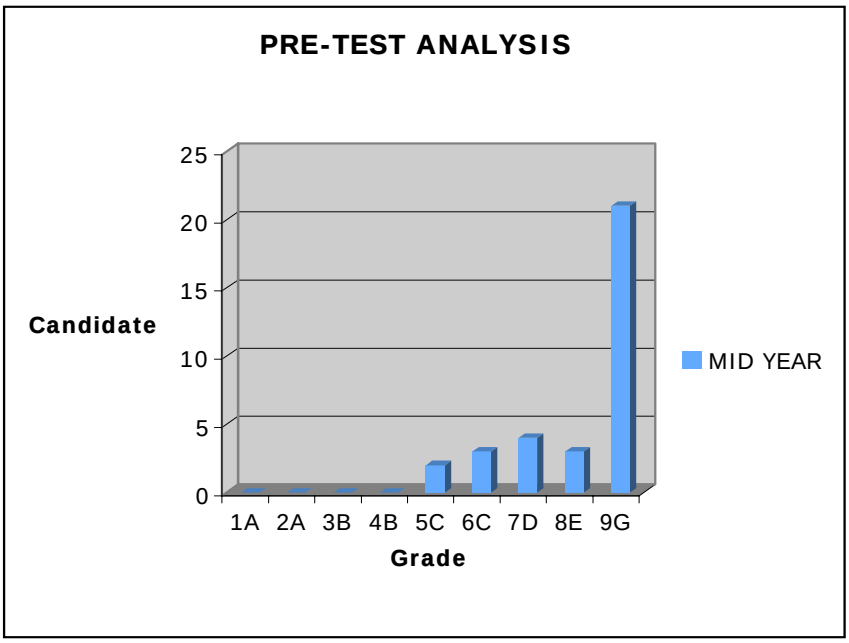

Chart 1 Pre-test analysis

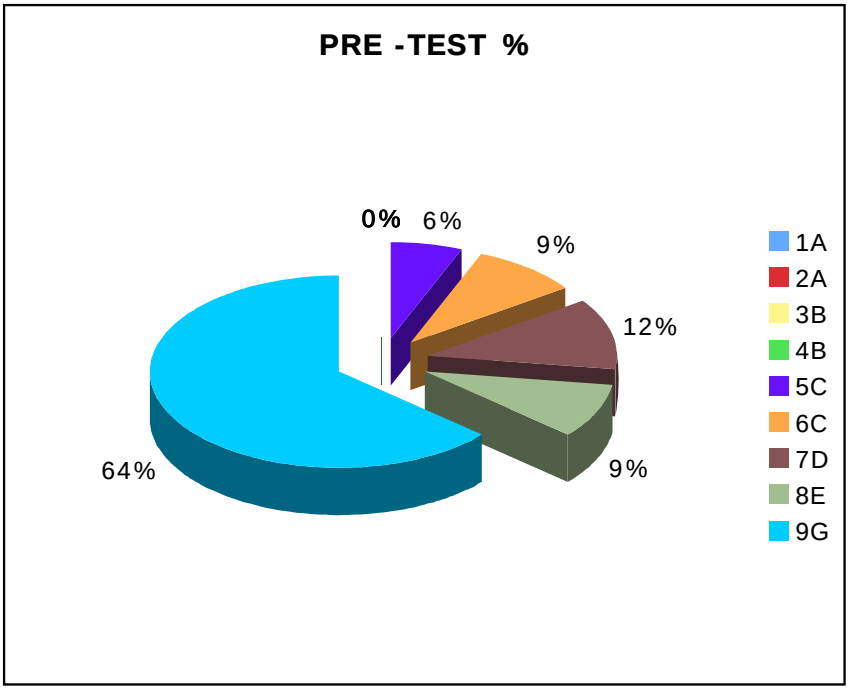

Chart 2 Percentage of students' achievements in the pre-test

The post-test graph below shows that **18** students had surpassed the red zone whereby a better array in the distribution of number of passes.

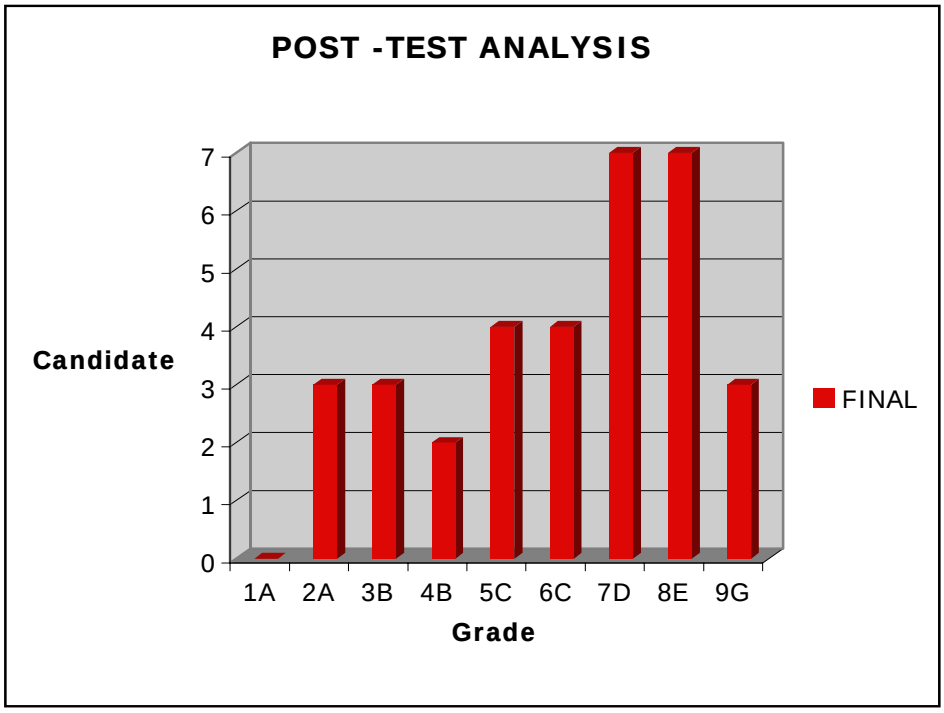

Chart 3 Post –test analysis

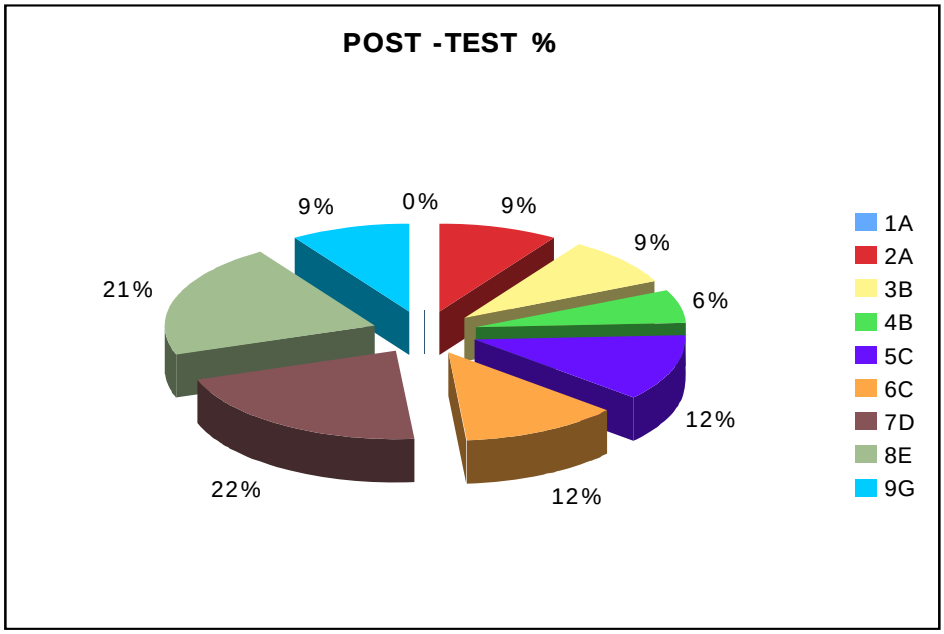

Chart 4 Percentage of students' achievement in the post-test

Honestly, I'm proud with my students' achievements and commitments. They have worked hard to unleash their true potentials and improve their technique.

During our discussions, some students told me how excited and motivated they were to exploit and manipulate assorted colours. To me, exploring the world of colours would entail endurance, enthusiasm, patience and perseverance.

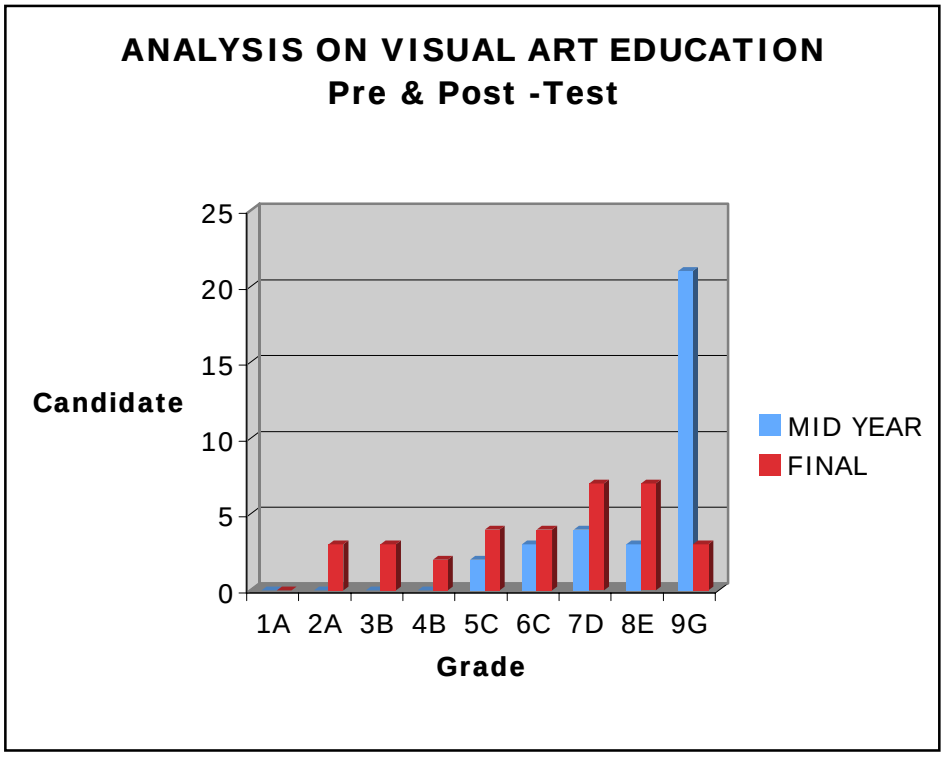

Chart 5 Analysis on visual art education for the pre and post test

By looking at the graph above, I believe that given enough time, the students will attain and master the symbiosis colouring technique while listening to the music in the background.

8.0 ACTIONS

8.1 Pragmatic Approach in P&P

Students' time in the studio have been extended to allow them to produce the 3D artwork. Students were encouraged to be creative & innovative in their work of art. Thus, they were trained to think out of the box.

8.2 Exposure to Various Medium

Through exploration, tryouts and investigation of mediums, students were able to apply colouring techniques innovatively such as using fingers, hair & natural dyes.

8.3 Application of Technique Similar to Symbiosis

This is a technique whereby students applied various methods of different mediums in drawing and painting. I felt that it is necessary to arouse the students' subconscious mind in order to develop creative and innovative thinking.

Creativity is about making connection where none existed before.

8.4 Awalullakhir - Colouring Technique

The main focus of this technique is to understand the phenomenon of colours.

8.5 Colour My World

Students studied the colour phenomenon through observation and appreciation of colours reflected by nature and was required to decide on two colours which they believe represented them.

9.0 IMPLEMENTATION AND EVALUATION

The students were exposed to various mediums that should be explored and studied creatively. I encouraged them to have fun with colours and did not restrain them from applying various techniques. As a matter of fact, based on the theme given, they had the freedom to produce their masterpieces.

I discovered that most of my students were confined to certain ideas and mediums only. Thus, when requested to the use of fingers and natural sources as tools to paint, they became intrigued and excited. In addition, I had infused music as an inspiration and to add to the gist of the technique similar to symbiosis

In the Awalullakhir stage, I started the process from the introduction to the theory of colour to the application of colours. The students then went on exploiting and demonstrating their colouring skills in creative manner.
To understand this phenomenon of colours, each student was asked to select two colours which would represent themselves. By choosing these colours, the students have exhibited some understanding towards the colour phenomenon. Consequently, they will explore the reaction of colours when using different techniques. I ensured them that the results and outcome were subjective thus enhancing their confidence and having fun in trying and exploring with colours.

From my initial observation, I noticed that my students were reluctant to use other objects for colouring such as using their fingers, sticks, leaves, hair, husk or others. In terms of using brush strokes, after applying several colouring techniques, their artwork has improved to some extent.

> At the first stage, students were asked to colour a portrait distributed to each of them. They had the freedom to opt for any medium and techniques. During the 'crit-session', they presented and assessed each other's work. Next, they were required to study the picture of a tree as the subject-matter. It was obvious to me that the latter

product had improved vastly, with appropriate choice of technique and medium. I believed that the improvement was due to the increase in their confidence level. As reinforcement, I prepared some textbook exercises on paintings, materials, mediums and colouring techniques.

10.0 REFLECTIONS

My students showed great interest and enthusiasm while having fun with and exploring various colour tones when carrying out the exercises in the classroom. They started to experiment with various colour tones and not limiting to using the original colour. Based on the findings, 8o percent of the students were able to think beyond their thinking box but 20 percent were reluctant to think creatively. They saw trees in shades of browns and greens while others can accept the fact that there are numerous colours which can be used for tree stems and leaves. These students started looking an object from the point of view of an artist.

It was discovered that 90 percent of the students bravely explored the colour mixtures, while another 10 percent have not overcome the magical phenomenon of not painting straight from the tubes.

Some efforts were seen in the students' latter colouring exploration of the trees. It's obvious that they had gained confidence and insight of what nature looks like while colouring. I had recommended this method to the lower secondary students so they too can gain confidence and grasp the colouring technique. Their colouring technique would improve immensely once they master the basic concepts of colour theory.

11.0 PROPOSAL FOR THE NEXT RESEARCH

I propose the use of music during in the teaching of visual art. In fact, I have started incorporating classical instrumentals in some of my classes to study the impact and influence of music to their artwork. The next research will focus on the impact and effectiveness of music to the minds and emotion in creating and producing masterpieces.

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ATTACHMENT 1

Colour phenomenon exercises – Below are six artworks by the students. The research was based on the technique, medium and colour. The students were given freedom to choose their subject-matter.

ATTACHMENT 2

Artwork - Before and after employing the symbiosis process.

Paper size : 28cm x 38cm.

	Before	After
1.		
2.		
3.		

ATTACHMENT 3A

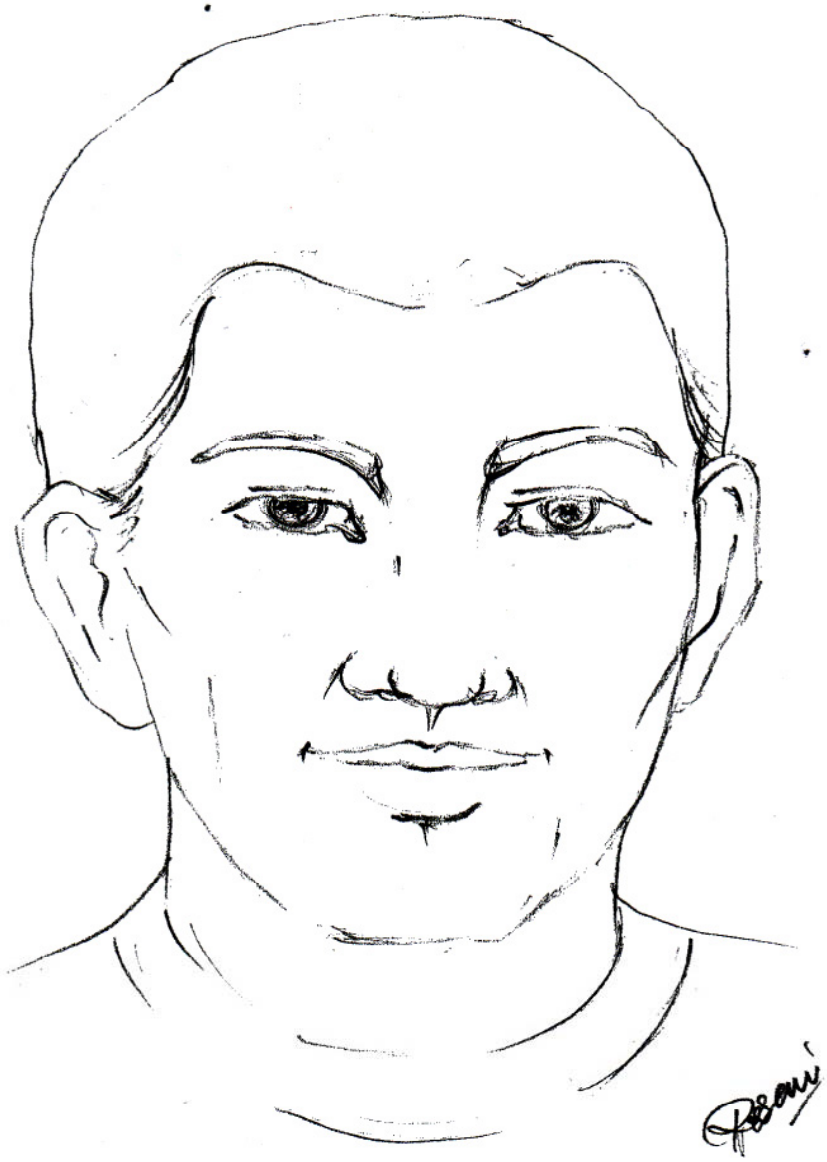
Students' artwork - Applying their own colouring technique on handouts. The results are as seen below.

ATTACHMENT 3B

Students' artwork - Applying their own colouring technique on handouts.

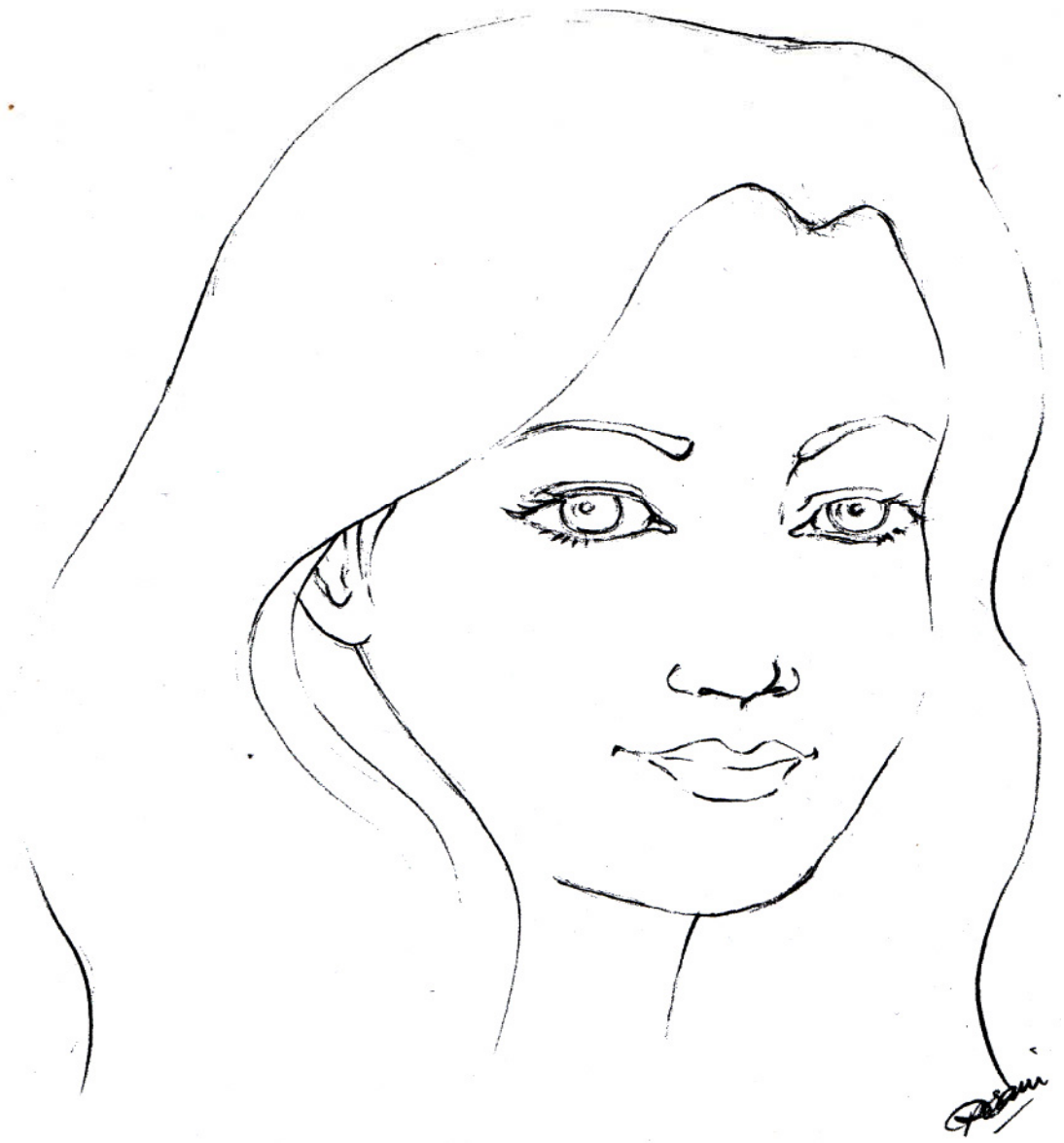
ATTACHMENT 4A

Handout - Display no.1 : Portrait of a man



ATTACHMENT 4B

Handout - Display no.2 : Portrait of a woman



Collaborative Learning Based on Community's Problems: Garbage Management

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Abstract

The purposes of this study were: to look into the conditions concerning garbage problems of Cho Hae Municipality ; and to find out appropriate collaborative learning model enhancing management effectiveness with the involvement of all parties .

The study revealed that 2,648 households, schools, temples, health centers, shops, markets, streets, government offices and others generated approximately 8 tons of garbage daily. The treatment area, located in conservation forest- 500 m. from the village, practiced open-air burning and burying twice a year. Volume of household garbage outnumbers other sources. Due to Residents' ignorance of segregation and excessive littering, garbage volume has been increasing continuously. Mainly, residents thought they pay the fee, municipality is responsible for disposing. Moreover, there was just one-can system on streets , it's no use segregating. Even more there was no campaign on segregation. It was suggested that Cho Hae Municipality should launch the following pilot projects ; garbage management groups, three-can system, EM application and the Bio-way of Life for Sustainable Development, earth-protecting bins for composting kitchen garbage, village competition, spraying garbage plies with EM solution, bio-power from garbage, reducing plastic bags campaign, and a new landfill. Suggestions for residents included; sorting, composting kitchen garbage with EM, bokashi (intensive bio-compost) and molasses, EM solution for toilet and polluted water, using cloth shopping bags. Suggestions for schools included integrated learning of waste management, Bio-way of Life for Sustainable Development and the Philosophy of Sufficiency Economy through essay writing, painting, composting, recycle banks, invention. For temples, reducing plastic containers campaign, notices and three-can system should be provided, as well as lighting incense sticks when necessary.

The Successful collaborative learning consisted of eight parties; people eager to know, those eager to share, those with adequate interests, people with know how, local wisdom, facilitators, sponsors and learning group network. Further more, resources, technologies or innovations should be available as well was time and place.

Introduction

One of serious problems threatening our society is impact from inefficient garbage management. The practice of garbage burning on the ground and the leftover garbage in communities has similar impact on environment and residents' health including polluted air from garbage burning and resultant smoke cause residents' illness, contaminated water from leftover garbage on the ground mixed with rain water flowing into waterway or dissolving into the ground contaminates water resource and soil, vector resources such as rats and flies living in the garbage piles, unpleasant smelly leftover garbage irritates residents and garbage dropped from collecting trucks make dirty streets and affects people's quality of life.(Pollution Control Department: 2007)

Garbage problems arise from both people's excessive littering and ineffective treatment, which means society involved in the increasing amounts of garbage. So the solution should come not only from the government but from all sectors so that sustainable disposing system works.

Since there is no home waste treatment system like industries, household garbage are sent out for disposal. The problem is hazardous waste mixed in with household garbage make it difficult for disposing. Thus, people should learn to segregate from the source – home - before sending it out so that recycled garbage be sent to recycle plants and bio- composting plant.

Various types of effective microorganism(EM) were studied in composting and certain types that help speeding decaying and reducing unpleasant, irritating odor from fermentation were found. After a certain period, bio-garbage treated with EM, molasses and bokashi become compost for plants. By-product, EM solution ,can be used in lavatory, cleaning, gardening or in animal farms.

Cho Hae municipality in Muang district, Phrae province, like other suburb communities, has encountered crisis garbage collecting and disposing problems. According to the municipality's Public Health and Environment section (2004), the municipality was responsible for collecting and disposing garbage from 2,639 households which generated 6 tons of garbage daily. There are 1,500 collecting bins throughout the community. Each householder pays 10 baht fee monthly. Garbage fee collected from household did not meet the expense and its treatment area of approximately 4 rai located in conservation forest, only 500 m. away from living places. The treatment methods including open-air burning, burying which turned the area into garbage plies, vector resources, sending out irritating smoke and odor directly affected nearby households, restaurants and tourist attractions. In 2004 Complaints were sent to the governor and even to the Prime Minister Office. Cho Hae Municipality has tried many alternatives to solve the problems such as supporting Youth Group activities in collecting, sorting, composting bio-garbage for supplementary incomes, but it was not sustainable because the group members moved to work or further their study in other cities.

In addition to educating, training and academic serving burdens, Phrae college of Agriculture and technology, Denchai district, has served as agent for The Bio-Way of Life for Sustainable Development Project, sponsored by EGAT (Electricity Generating Authority of Thailand) aiming to distribute EM innovation for community uses according to His Majesty the king's initiated "The Philosophy of Sufficiency Economy". Through this

project, students practice the process, innovation and became teachers' assistants in training courses as well as experiencing authentic learning from community problems which regarded as mean of vocational learning reform.

Objectives

1. To look into the garbage management conditions of Cho Hae Municipality, Muang, Phrae
2. To find out appropriate collaborative learning model enhancing garbage management effectiveness with involvement of all parties

Methods and Materials

This study was participatory action research. The samples included totally 150 of representatives from residents, schools, temples, public health station, Cho Hae Municipality staff. Methods employed included sharing ideas, workshop, group discussion, in-dept interview, observation, and experiment based on hygienic and healthy garbage management process. Materials comprised 100 earth-protecting garbage bins(kitchen garbage bins),1,000 kgs. of bokashi(intensive bio-compost), 300 litres of molasses,10 gallon of EM solution. Research tools included notes record, interviewing /observation forms, questionnaire, tape- recorder and camera. The statistics for quantitative data analysis included percentage, mean and standard deviation and content analysis, induction, and triangulation check for qualitative data.

Result and Discussion

1. Conditions and situation of Cho - Hae Municipality and its disposing system

Cho Hae municipality is a small-size municipality located 8 kms. to the east of Muang district, Phrae province. It covers an area of 174 km^2, divided into 14 villages scattering on hillside and in the mountains. The population of 8,772 people make 2,639 families. Mostly, they practice agriculture; the rest comprised of trading, manufacture, cottage industry, construction workers, civil servants, state enterprise officials labors and collecting wild products accordingly. The community's economics depend on agriculture and they lead their combination of suburb agricultural and city life. The community's strength includes tourist attractions, natural environment and resources, quite healthy economics due to literate residents and saving habit and infrastructure. Weaknesses including inadequate leveled land for culturing, repeated drought, environmental and garbage problems.

2. Conditions and situations of target village, Ban Tham Muang Moo 4

Ban Tham Muang , the 4^{th} village of Cho Hae subdistrict , lies to the south with an area of 4 km^2, half of which are rice fields and vegetables beds. The 340 households with1,044 population (comprise farmers, artisans ,mongers, skilled labors and civil servants orderly) and divided into12 units. The main incomes depend on agricultural products. Local wisdoms, traditional tea leaves fermentation method, well-managed quilting group, mushroom culture group, alert leaders and participation from all agents make the village's strength whereas inadequate agricultural land and water, unstable agricultural products price and lacking of modern technology, Innovation, knowledge led to environmental problems are weaknesses.

3. Cho Hae disposal system

The Cho- Hae Public Health and Environment Section is in charge of waste management unit which is responsible for collecting, treating and disposing garbage/ waste in the area. The collecting team of 6 and 3 trucks start work at 5.30 from Monday to Saturday. Generally each truck makes 3 dumping trips a day and doubling on Monday. Almost all household garbage are mixed (wet / dry, disposable / un-disposable). Even ashes, saw dust, infected waste, banana stems, leaves, sticks, branches and construction /demolition waste were placed around collecting bins. The 3 garbage trucks, 15,13 and 6 years, are not in good conditions ,so water leaked and garbage dropped on the way to treatment area make dirty streets. The disposing method combines of open-air burying and burying twice a year . The only treatment practiced was spraying garbage plies with EM solution twice a month. Decaying garbage piles becomes rats and flies resources. Since monthly garbage fee collecting from householders is approximately 30,000 baht (not meet with the expense of 80,000 baht), the municipality could not improve to conditions.

4. Causes of garbage problems

1) **Inadequate participation**: Householders pay, so the municipality serves.
2) **Ignorance/ lack of awareness**: Residents don't know what they will get from garbage sorting. Some thought that extra earning from garbage was not worth the time loss. Many of them didn't know where to store or lack storing place for sorted garbage which takes awhile before selling.
3) **Inappropriate one-can system**: Although people segregate from home, it go into on can. So it's a waste of time to segregate.
4) **Littering habit change due to life style change** : Office/ factory workers, mongers consume more industrious and ready cooked food instead of home-made, so number of packages, cans, plastic bottles, plastic bags increase dramatically. More over they fail to litter at the agreed time.
5) **Very few activated campaign in the area:** Only lunch-time program of Public Relation section which sometimes announced the campaign.

5. Suggestions for Cho Hae Municipality

From the discussion and the workshop participated by all parties, the suggestions are:

1) Providing three-can system garbage bins throughout the community
2) Providing Earth-protecting bin for composting kitchen garbage
3) Setting up the workshop to arouse people to participate
4) Backing up pilot project in a volunteer village to practice
5) Establishing garbage sorting groups in 14 villages and link into a network
6) Adopting EM and Bio-way of life for sustainable development methods in daily life
7) Training group leaders, officer, collecting staff on how to make residents involve in the waste management.
8) Supporting schools' recycle bank project.
9) Launching campaign for plastic garbage reduction and dust bin-free road

10) Spraying garbage piles in the treatment area with EM solution every 2-3 days and rescheduling collecting time

11) Providing new site, technology and collect truck to build an effective waste management system.

6. Suggestions for residents

For residents suggestions included

1) Compost from kitchen garbage and other organic garbage
2) Sorting rubbish for extra earning,
3) Using EM solution in toilet and treating polluted water, alternative agriculture,
4) Using cloth shopping bags
5) Turning sticks to fuel.

7. Suggestions for schools and temples

Schools were suggested to integrated learning waste management, Bio-way of Life for Sustainable Development and Sufficiency Economy into classroom lessons through essay writing, painting, leftover composting, recycle banks, invention from wastes, an cleaning the toilets with EM solution. For temples, reduction of plastic containers campaign and three-can system should be provided as well as compost, lighting incense sticks just as necessary.

8. Collaborative community based leaning attempt

Residents' learning focus on garbage sorting, EM, Earth-protecting bin, composting and including market prices of garbage based on materials, how to store and trade recycled materials to get better price and how to use bokashi, bio- compost in place of chemical fertilizer. Learning process including idea sharing, story telling, group discussion, planning, practice and self-assessment. Each topic was made into one-day training course. The 3PS technique applied consisted of presentation (present samples and then discussions story telling etc.) in the morning and in the afternoon practice either in pairs, or in groups, self assess.

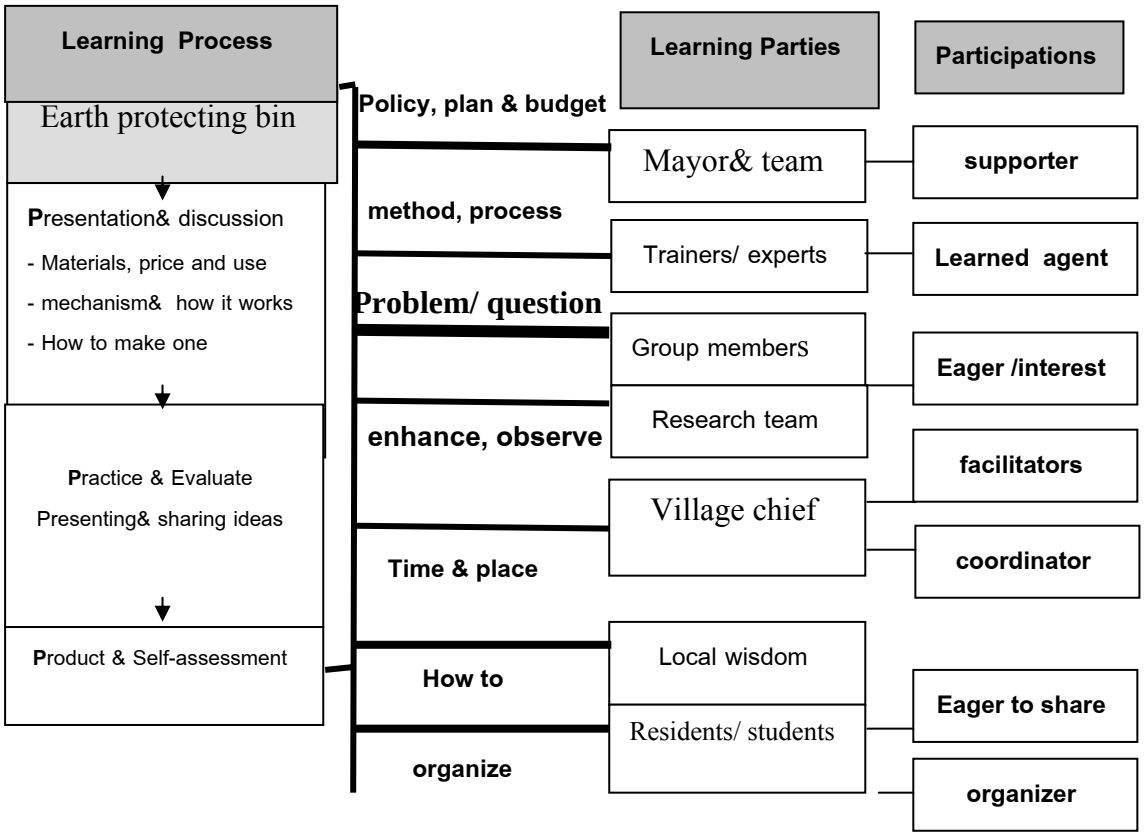
9. Collaborative leaning model

After many attempts to perform community based learning section it revealed that learning activities such as idea sharing, public hearing, brainstorming, practicing, experimenting, and study trip worked. Learning topics including EM, Bokashi, Earth-protecting bin, garbage sorting, garbage disposal, soil and fertilizers, plant hormone, insect repellants, bio-way of life for sustainable development, philosophy of sufficiency economy etc.

Other than trainers assistants during the training course, student from Phrae College of Agriculture and Technology had opportunity to practice scientific process, assisted brain stormed, and shared ideas with learning group as well as learning from local wisdom in community. These ensured them of authentic learning and become more confident.

The model for collaborative learning consisted of eight parties; 1) those who eager to know 2) those who eager to share 3) those with adequate interests 4) ones with know how 5) local wisdom 6) learning network 7) facilitators, and 8) supporters. More over, resources, technologies or innovations should be available as well was time and learning place.

Model for collaborative community-based learning of Cho - Hae Municipality



10. Results from collaborative learning to enhance garbage management

The average money earning from rubbish sorting was 94.33 baht per month with maximum of 586 baht and minimum of 36 baht. Only 20 per cent of solid waste was found in the area and 14 householders didn't sell but gave their segregated garbage dustmen.

The 100 householders participated in EM and Earth-protecting bin experimenting reported that the process worked and 78 of them used the bio-compost in cultivation, 16 of them did not use, but gave it to neighbors and 6 households did not have enough waste to compost.

The householders' opinion towards EM, Earth protecting bin and the Bio- way of life for sustainable Development was totally at high level. They thought that the bin, organic compost with EM and the project help treat household garbage. Composting helped reduce garbage volume. Sorting wet and dry garbage helped improve waste management.

For storing compost to replace fertilizer and water from the bin good for cleaning toilet, the opinion was at medium level. The study also revealed that school recycle banks network had satisfactory outcome. Ban Pa Daeng school was awarded the best practice for washing and collecting UHT milk packages for recycling from The Commission of Containers Management for Environment in 2008. Municipal plans, projects and activities were adjusted as suggested and the office was awarded for good performance in 2008.

The pilot group of Ban Tham Muang practiced collaborative learning with involvement from all parties successfully and awarded for the best practice on sufficiency economy village of Muang District, and awarded for the best practice on participated environmental planning from Cho -Hae Municipality.

Students of Phrae College of Agriculture and Technology experienced authentic learning in community, built a 200 litre can for making charcoal and distributed for their extra earnings.

Factors that Enhanced the Participation and Collaborative Learning

1. Participation of the village chief from the start makes strong learning group
2. There were people who eager to learn and local wisdom who eager to share
3. The garbage problem affected all community, so finding solution was a must.
4. Contents of the learning were short, not too difficult, so family members took turn participated (Anyone can learn)

Suggestion

Besides The Bio-Way of Life for Sustainable Project, short course training such as food procession, food preservation, traditional cuisine, crafts, decorative cloth and others should be provided for community based learning so that students could experience and practice research from them.

Suggestion for further study

1. Frequency of EM solution spraying on garbage piles in the treatment area should be studied to find out the most effective period for bad smell treatment**.**
2. Teachers should motivate students to study how to make use of bamboo stripes garbage from traditional tea leaves fermentation process which is still found in a large volume.

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KOMiK : Help Identify Name, Function And Symbol Electronic Component

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Abstract

The purpose of conducting this action research is to help Form 3 students identify name, function, and symbols of the electronic components. This topic is taught to students who chose Home Science as an elective component of the Integrated Living Skills subject. Analysis of the test carried out in April and the mid-year Exam 2008 showed that 20 out of the 22 students of 3 Omega scored low marks in this subject. Action should be taken to help these students overcome their problems. The integrated activities were prepared to help students understand and be more interested to learn, thus be able to answer the questions concerning this topic. The activities are called "KENALI DAKU (KNOW ME)", "CINTAI DAKU (LOVE ME)", CINTA BERSEMI (LOVE BLOSSOMS)" and OMEGA 3. Activities for the 'KNOW ME' section include introduction to all the electronic components which were learnt in Form 2 and 3. Every component has different pages attached with its symbol and functions. While the activities for 'LOVE ME' section were geared towards the electronic activities that the pupils' had learnt. The section "LOVE BLOSSOMS" involved activities such as matching the function with the component symbols. This activity was learnt in group and the students were divided into 2 groups. Omega 3 was introduced to enable pupils to remember and it lasted for five minutes before learning and teaching were carried out. After these activities were implemented, the results obtained were far better than before. I am sure that these activities have helped the students to identify names, functions and symbols for the electronic components and be able to answer the questions accurately.

1.0 REFLECTION

The academic achievement of Tokai Secondary School was at the satisfactory level. There were 22 pupils who opted for Home Science Component (ERT) in Integrated Living Skills subject (KHB). The students were categorized into 2 groups. The first group obtained good results whereas the second group obtained satisfactory results. However, students did not do well for the electronic topic. This topic was considered difficult by the students as they were unable to memorize the components involved. Furthermore, there were many components that had more than one close symbol which were identical and components which had more than one function. Pupils were confused by this and they failed to understand this topic.

Based on the analysis of the April Monthly Test and Mid-year Examination 2008 results (15% electronic question out of 60 questions KHB-ERT), I discovered that pupils had difficulties in answering electronic questions. This clearly showed that pupils failed to fully master this topic. After discussing the examination questions and having a Pre Test, it was

found that the pupils failed because they did not memorize the components names and the electronic functions and pupils were confused with the component symbols.

Referring to the above reflection, it is hoped that the action plan prepared by teachers will help pupils to overcome the problem effectively. With these activities, pupils are expected to answer correctly and obtain excellent results in the Lower Secondary Assessment (PMR).

2.0 FOCUS OF STUDY

When analyzing the mid-year examination result, I discovered that there were 15 percent out of 60 questions posed were on electronics. Only two out of 22 pupils were able to answer seven questions correctly. The other pupils only answered 2 to 4 questions correctly.

From the discussion with the students, I found out that the problem was, they could not identify names, functions and symbols. So, the students were unable to answer the electronic questions. The pupils' attitudes were identified as the main factor problem in this case. They are lazy to memorize all the functions and symbols components.

If there were no action taken immediately the students would continue to get low marks in every test. The students' achievement in PMR would continue to drop.

3.0 OBJECTIVE OF STUDY

3.1 General Objective

Enhance comprehension and increase students' interest level during the learning and teaching of Home Science and able to achieve excellent results in PMR's Trial Examination 2008.

3.2 Specific Objective

i. Students will be able to have a clear understanding of the topic
ii. Students will be able to identify names, symbols and the functions of every electronics components.
iii. Pupils will be able to answer at least 90 percent of the questions on electronic in the trial PMR and 100 percent in the real PMR 2008.
iv. Increase the quality of academic achievement among students seating for the PMR in 2008.

4.0 TARGET GROUP

The number of Form 3 students selected for this research was 20 students and they were divided into three groups. There were seven students in group 3S; seven students in group 3M and six students in 3T. These students are all females who have chosen Home Science as their elective subjects.

5.0 IMPLEMENTATION OF STUDY

5.1 Problem Survey

The students' weaknesses in answering the questions were detected when analysing the results of the April monthly exam and the mid-year exam. I decided to overcome this problem and help other teachers' to implement these activities to improve the students' performances. Thus a pre-test was carried out in accordance to the April monthly test and mid-year exam.

5.2 Analysing Problem

5.2.1 April Monthly Test

Based on the April Test results, it was found that most of the students get low marks. The April test consists of 50 objective questions on electric and electronics (Form 3). The analysis of April monthly test is shown in Table 1:

Table 1
Analysis April Monthly Test

NO	NAME	APRIL TEST (%)
1	Sample 1	52
2	Sample 2	42
3	Sample 3	32
4	Sample 4	38
5	Sample 5	38
6	Sample 6	50
7	Sample 7	50
8	Sample 8	42
9	Sample 9	38
10	Sample 10	46
11	Sample 11	48
12	Sample 12	42
13	Sample 13	36
14	Sample 14	36
15	Sample 15	38
16	Sample 16	32
17	Sample 17	38
18	Sample 18	38
19	Sample 19	32
20	Sample 20	42

5.2.2 Mid-Year Examination

Based on mid-year examination results, only five (5) students answered four (4) questions correctly out of nine (9) questions on electronics. Analysis of students' achievements of the mid-year examination is shown in Table 2.

Table 2
Analysis Mid-Year Examination (based on 9 questions on electronics)

NO	NAME	CORRECT ANSWER
1	Sample 1	4
2	Sample 2	3
3	Sample 3	4
4	Sample 4	3
5	Sample 5	0
6	Sample 6	4
7	Sample 7	2
8	Sample 8	4
9	Sample 9	1
10	Sample 10	2
11	Sample 11	3
12	Sample 12	4
13	Sample 13	2
14	Sample 14	2
15	Sample 15	2
16	Sample 16	0
17	Sample 17	2
18	Sample 18	1
19	Sample 19	0
20	Sample 20	2

5.2.3 Pre-Test

For the pre-test (Apendix 1), students need to answer 50 objective questions which was formulated by using the current PMR format. The test was conducted in the afternoon when the students were attending extra classes for Integrated Living Skills subject. Students were given an hour and fifteen minutes to complete the test. The analysis of students' achievements in the pre-test is shown in Table 3.

Table 3 *Analysis of The Pre-Test*

NO	SAMPLE	PRE-TEST (%)
1	Sample 1	30
2	Sample 2	48
3	Sample 3	34
4	Sample 4	52
5	Sample 5	62
6	Sample 6	40

NO	SAMPLE	PRE-TEST (%)
7	Sample 7	22
8	Sample 8	30
9	Sample 9	36
10	Sample 10	52
11	Sample 11	38
12	Sample 12	52
13	Sample 13	22
14	Sample 14	30
15	Sample 15	34
16	Sample 16	56
17	Sample 17	22
18	Sample 18	52
19	Sample 19	20
20	Sample 20	52

Based on pre-test results, many students still score less than 40 marks. The results showed that many students were still weak and unable to master the topic. I decided to do something to the students. I had come up with four activities to solve this problem.

5.3 Actions Conducted

5.3.1 Activity 1: KNOW ME (*KENALI DAKU*)

The activity was introduced to students to increase comprehension on the topic of electronics. They would remember the names, functions and symbols of electronic components that they had learnt in Form 2 and 3. I asked the students to bring the text book and I also distributed Form Two electronics notes to them. The note would help the students to complete the task given. The activities were as follow:

Step 1: Each students has to prepare a "Smart Book"

Step 2: Teacher gives a list of components. Students copy the list on the first page of the smart book.

Step 3: A set of electronics components is given to students.

Step 4: Students paste all the components in the smart book. One component is pasted in one page.

Step 5: Students have to draw pictures of some components which have not been given to them such as adjustable resistor, toggle switch, tap switch open, tap switch close, electromagnet buzzer, electromagnet piezo and microphone. Students can refer to their text book and pamphlet/notes given.

Step 6: Students will find out about the functions and symbols of the components in the text book and pamphlet/notes given.

Step 7: When the students have completed all the activities (Activity 1 – Activity 6), the teacher will have discussions with the students and referring to the smart book

Tool in use:
1. Smart Book
2. Form 2 Notes on electronics components
3. Electronics components set
4. Form 3 Integrated Living Skills text book

i. Observation

The teacher was able to teach well and the students enjoyed doing the activities because all the electronics components would be their personal set. They were also very eager to find out the functions and symbols of the electronic components. The teacher was able to control the noise level in the class because the students were busy completing the activities quietly and excited to find out the answers correctly.

ii. Reflection

At the early stage, students did grumble because they thought that they had to carry out the electronic practical lesson again. After the explanation, they understood what they had to do. By doing the activities, students were able to memorize the names, functions and symbols of the electronics components easier and faster. When the teacher was explaining, the students were quiet and they listened attentively. During the discussion, all students took part actively because they were able to find the answers to the questions posed.

5.3.2 Activity 2: LOVE ME (*CINTAI DAKU*)

The activities were carried out so that students could remember the names of the 16 components that they had learnt in Form 2 and Form 3. For this activity, the teacher used acronyms to enable students to remember each component. In short, the activities are as follows:

Step 1: Teacher lists all the components on the white board. Teacher writes the entire first alphabet of the name of each component. (Refer to Table 4)

Table 4 *List of Electric Components*

No.	Name of electric components
1	Piezo buzzer
2	Light emitting diode (LED)
3	Fix resistor
4	Integrated circuit
5	Non polar capacitor
6	Toggle switch
7	Speaker
8	Micro switch
9	Microphone
10	Variable resistor
11	Tap switch open
12	Tap switch close
13	Polar capacitor
14	Electromagnet buzzer

No.	Name of electric components
15	PNP transistor
16	NPN transistor

Step 2: Teacher construct a sentence based on the first alphabet of each component as shown in the box below.

LISTEN **F**OR **I** **N**EED **T**O **S**LIM **M**Y **M**OTHER **V**ERY **T**IRED **T**O **P**AY **E**XTRA **P**ENNY **N**OW

Step 3: The students will read the sentence and understand it.
Step 4: The students are given 10 minutes to memorize the sentence.
Step 5: After memorizing, the students are asked to say out the sentence again.
Step 6: Students are asked to copy out the sentence in their smart book; one word on one line. Students are supposed to write the components represented by each alphabet. Refer to the table below:

Table 5
Constructing Sentence by Using The First Alphabet of The Electronic Component

No.	Name of electric components	First Alphabet	Words
1	Piezo buzzer	**P**	**P**lease
2	Light emitting diode (LED)	**L**	**L**isten
3	Fix resistor	**F**	**F**or
4	Integrated circuit	**I**	**I**
5	Non polar capacitor	**N**	**N**eed
6	Toggle switch	**T**	**T**o
7	Speaker	**S**	**S**lim
8	Micro switch	**M**	**M**y
9	Microphone	**M**	**M**other
10	Variable resistor	**V**	**V**ery
11	Tap switch open	**T**	**T**ired
12	Tap switch close	**T**	**T**o
13	Polar capacitor	**P**	**P**ay
14	Electromagnet buzzer	**E**	**E**xtra
15	PNP transistor	**P**	**P**enny
16	NPN transistor	**N**	**N**ow

i. Observation

The students were interested in carrying out the activities. The students were able to memorize the sentence. I discovered that the activities were very effective in helping students learned about the electric components.

ii. Reflection

Within ten minutes, students were able to memorize the sentence that they had learnt. I was proud of the results that I have obtained from the activities carried out.

5.3.3 Activity 3: LOVE BLOSSOMS (*KASIH BERSEMI*)

This activity was carried out to help students remember the function and symbol of the electronic component. This activity was conducted in group because students need to match functions and symbols in the papers given by the teacher. Pupils need to find the correct answers and paste them on the paper given. The activities procedures are as follow.

Step 1: The students are divided into two groups. Each group is given a set of LOVE BLOSSOMS (*Kasih Bersemi*). This is to avoid wasting of time as the activity is carried out.
Step 2: Students are given 20 minutes to complete their sets.
Step 3: Each group has to give a presentation and explains what they have learnt to the other groups.
Step 4: During the activity, students are not allow to refer to their smart book.
Step 5: After the explanation, each group has to change the set. This is to enable every group to learn, understand and present each of electronic component sets given to them. At the end of the process each group will be able to describe the functions of each electronic component. (Every group is given 15 minutes only as they have heard the answers during the presentation)

i. Observation

Pupils were quite noisy when finding the answer during the activity. However, the teacher managed to control the students when the activity was carried out.

ii. Reflection

The lesson went on smoothly. All the students were able to complete the task given. Students were motivated to finish their sets. I was surprised that many students obtained the correct answer without referring to their smart book.

5.3.4 Activity 4: OMEGA 3

After completing Activity 1 to 3, students were given one week to read and memories the components that given. Students are required to bring the smart book. The activities are as follow:

Step 1: Students are given three minutes to revise by using their smart book before questions are given.
Step 2: Students are required to close the smart book and prepare to answer the questions.
Step 3: Teacher will choose a component and a student will identify the function of this component.

Step 4: If the answer is right, another student will be called to draw on the blackboard the component's symbol that has been identified.
Step 5: Other students are required to check the answer which is given.
Step 6: If the answer is wrong, other student will be called to give the correct answer.
Step 7: If the answer is still wrong, students are permitted to refer to the smart book.

i. Observation

Sometimes the activities took more than 5 minutes because the student, who was called to answer the question, took a long time. Sometimes the answer given was wrong. However, this activity is effective because all students were prepared to answer the questions. Students showed some level of confidence when answering the questions although that answer given was wrong. This shows that the activity would increase the students' confidence level.

ii. Reflection

In first week, I have problem because there were many students who did not bring their smart book. After giving them warnings, all students brought their smart book. When the activities started, all students were ready with the smart book although the instructions were not given yet. This showed that the students were ready to answer the electronics' questions. I feel proud because the students were able to answer the questions. They seemed to appreciate all the material that they have.

5.3.5 Post Test

Post Test was given to students after they have carried out Activity 1 and Activity 2. To carry out this Post Test, I conducted it during the extra classes because the students chose Integrated Living Skill – Home Science came from three different classes. The questions for the Post and Pre Test set were the same. The test took one hour and fifteen minutes. Fifteen minutes were given so students could do some revision by referring to their smart book.

i. Observation

At first the students did not answer the question because the questions were the same as the Pre Test set. After the students knew the reason, they were excited to answer the questions. I also promised that those who answered correctly more than 20 questions from the Post Test would received presents from me.

ii. Reflections

At first I had problems of choosing the right time so that all the students who choose to take the subjects could take the Post-Test at the same time. This is because my samples include students from three different classes. After discussing with other teachers, we decided to have the Post-Test during the extra classes. Students gave good cooperation during the test. You could see the expressions on their faces that they could answer the questions. The fifteen minutes which was given to do revision on smart book were used well.

5.3.6 Assessment

The assessment towards the effectiveness of this action research is determined by comparing the results of the Pre-Test and Post-Test. The Post-Test was carried out after the students have completed Activity 1 and 2. The comparison of the results of both tests is shown in Table 6.

Table 6
Comparing the Pre-Test and Post-Test Result

NO	NAME	PRE TEST %	POST TEST %
1	Sample 1	30	62
2	Sample 2	48	62
3	Sample 3	34	58
4	Sample 4	52	68
5	Sample 5	62	66
6	Sample 6	40	68
7	Sample 7	22	66
8	Sample 8	30	64
9	Sample 9	36	50
10	Sample 10	52	66
11	Sample 11	38	52
12	Sample 12	52	58
13	Sample 13	22	54
14	Sample 14	30	54
15	Sample 15	34	54
16	Sample 16	56	60
17	Sample 17	22	42
18	Sample 18	52	52
19	Sample 19	20	32
20	Sample 20	52	54

5.4 REFLECTION OF RESEARCH

Based on the research finding, I found that most students could remember names, functions and symbols of the electronic components. Teachers need to use different methods of teaching to help students remember the names, symbols and functions of the electronic components. Changes in attitude and the inspiration to achieve success should be imbedded in the students. This is because to some students success would not come easily to them.

I also discovered that the activities that were introduced were effective and had helped the weak students to remember. By looking at the Post-Test results, I discovered that only one student received the same marks in both of the tests. The other 19 students showed tremendous improvements. The activities have helped the student to remember the symbols and functions of the 16 electronic components. During the activities, students showed enthusiasm to revise this topic. Hence, this shows that the activities have helped them to

understand and remember names, functions and symbols of the electronic components. Below is the table that shows the differences in percentages based on the grades set by the school.

Table 7
Differences in Grade for The Pre-Test and Post-Test

GRADE	MARK	PRE TEST	POST TEST
A	75-100	0	0
B	74-60	1	9
C	59-50	6	9
D	49-36	4	1
E	0-35	9	1

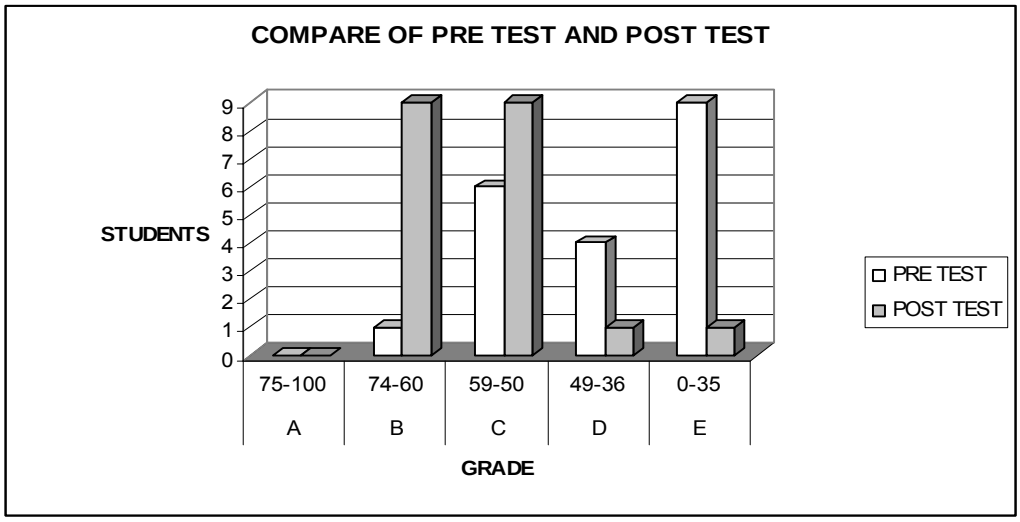

Chart 1 Comparing the Pre-Test and Post-Test result

Based on the above chart, we can see a great difference. Even though, no students obtain an A, but I am satisfied with their performances. I hope more students will pass and get excellent results PMR examination 2008.

6.0 SUGGESTION FOR THE RESEARCH

From the research which I have carried out, I realized that the activities chosen have helped students to be more interested to learn the subject especially on the topic of knowing the electronics component. The research also helped me to understand that I need different approaches to solve the students' problems. Teachers must be creative in conducting their classes in order to help students understand difficult topics.

The findings from the research are a good example and the other teachers should carry out this action research because the findings can help them improve the teaching and learning process. It can make the teaching and learning more interesting and effective. In my next action research, I would like to suggest a new topic known as the "Sewing Machine". An appropriate approach will be planned so that students can better understand this topic.

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A Development of English Skills Using "Seven Step Processes of Teaching to Develop a more Extensive Language Skills"

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Abstract

Purposes

The research aims to study English learning achievement of pratom 6 students (students in the sixth year of primary level) before studying and after studying, to develop pratom 6 English teaching plan using seven step processes of teaching and to study students' satisfaction in studying English using seven step processes of teaching.

Procedures

1. *Four English lessons for pratom 6 were planned and used according to seven step processes of teaching to develop a more extensive language skills.*
2. *The researcher had the students do pre-test before studying in order to compare with the posttest after studying each teaching plan.*
3. *Find the efficiency of four English teaching plans.*
4. *Ask about the students' satisfaction after having studied using the four English teaching plans.*

Findings

1. *The achievement test of pratom 6 students in learning English using seven step processes of teaching is higher than before studying at .01 level of statistical significance which is in line with the criteria set.*
2. *All the lessons were effective in achieving the set criteria.*
3. *The students were satisfied with the seven step processes of teaching as set in the criteria.*

The Background of Research

English is a universal language used around the world and it is a tool for wild varieties of knowledge. A person who is well educated and is good at English can be a good communicator. Moreover, he has the ability to consider only useful information to accept in order that he can improve himself, his family, his community, his society and his country efficiently. Besides, he should be trained to have the ability to analyze and to synthesize. He also has good judgement, creative thinking and good vision. Institutions related to education realize how important this subject is. So they specify the way of education management in the ***"National Education Act"*** and add amendment based on child-centered to improve learning and teaching styles. Teachers have become a facilitator to encourage students to learn, and at the same time students themselves practicing and learning to think creatively along with getting their own learning method or learning styles, too.

Moreover, the ***Basic Educational Curriculum*** apparently specifies the objectives that intend to develop students to be a good person, intelligent person and happy person on the basis of Thai value. Besides, students should have the ability to learn independently, the ability to think and decide freely, the ability to solve the problem cautiously and reasonably is a student who has a universal knowledge. He also has the ability to use technology effectively.

That reason was realized by academies and institutions related to education, so they intend to improve students through innovative learning process which emphasizes qualified students. Educational Research Institute (2001:179) finds that various activities, interesting activities and the interaction between teachers and students can help student accomplish his learning goals. He can proceed many activities by using communicative skills and using language with creative thinking. He also has a good attitude to communicate, and he can develop his way of learning himself; in other word he learns happily.

According to the ***Communicative Approach,*** the idea to improve students' learning behavior is that language is a communicative system; teacher should teach students to use language in a communicative way. Therefore, he should make his students themselves have the abilities to learn, to think, to decide and to solve problem independently and creatively. Students should have many chances to participate enthusiastically while learning as it is said in ***CIPPA Model.*** (Titsana Kammanee.2000:17-22)

Similarly, the Basic Educational Curriculum on connection with the ***Happy Learning Theory*** by Kittiyawadee Boonsue (1998:50-55) anticipates the happiness between teacher and students by six principles of teaching : Building good mental attitude, Know the value of learning, Close to nature of the surrounding, Building self-esteem, Learning socially and Adjusting themselves to the changing world.

In addition, ***Scaffolding Technique-***the fifth stage of the ***Concentrated Language Encounters (CLE)*** –adapted by Saowalak Rattanawich, focuses on helping students achieve knowledge by adding ideas from speaking, writing or doing activities. So the way of teaching can cheer up and encourage students until they gain achievement.

From the ideas and the principles above, I believe that they are likely to be the best way for English teaching.

The problem background of Pratom six English class at Wattammikaram School my school, is about my students' achievement. The result of their test is lower than the National Test Criteria. Besides, they lack abilities to think creatively; their vision is quite poor so that it is why I created the **Seven step processes of teaching to develop a more extensive language skills.** Hoping to eliminate the problems my students had in order that they can be qualified students-having abilities to think creatively, to communicate independently and to solve problem effectively.

Objectives of the Study

1. To study English learning achievement of pratom six students before and after studying with **Seven step processes of teaching to develop a more extensive language skills.**
2. To develop Pratom six English teaching plan by using **Seven step processes of teaching to develop a more extensive language skills.**
3. To study students' satisfaction in studying English by using **Seven step processes of teaching to develop a more extensive language skills.**

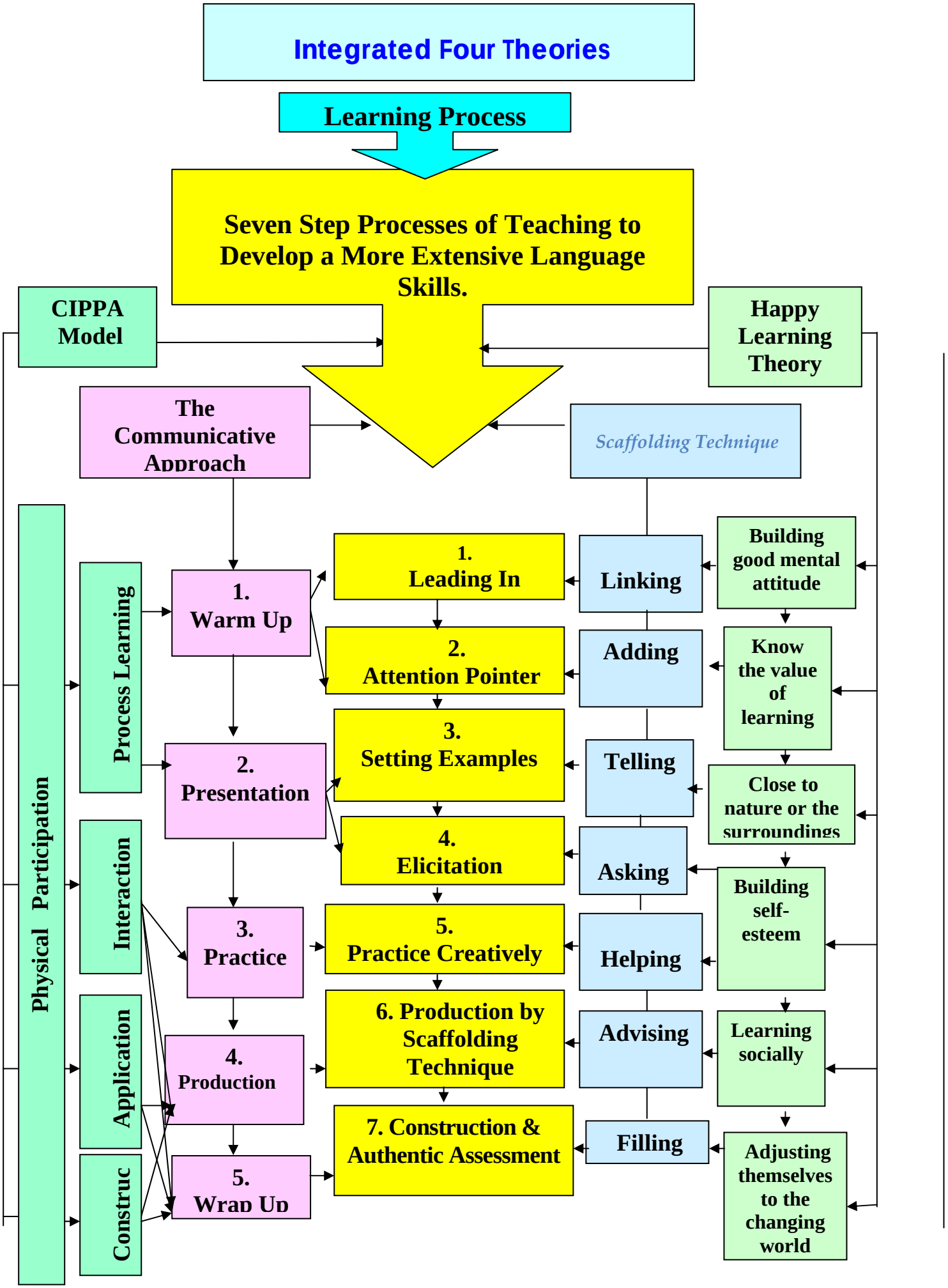
Theories

1. Communicative Approach
The well known five steps of language teaching-
Warm up, Presentation, Practice, Production and Wrap up

2. CIPPA Model
The teaching process created by Thai educator,
Professor Titsana Kammanee which focuses on the students and the improvement of learning and teaching styles by interacting the five principles- Construct(C), Interaction(I), Physical participation (P), Process learning(P) and Application(A)

3. Happy Learning Theory
The theory created by Thai educator, Kittiyawadee
Boonsue and her team which focuses on six principles- Building good mental attitude, Know the value of learning, Close to nature of the surrounding, Building self-esteem, Learning socially and Adjusting themselves to the changing world

4. Scaffolding Technique
The fifth stage of the **Concentrated Language Encounters (CLE)** a language approach which is adapted by Professor Saowalak Rattanawich, focuses on helping students achieve knowledge by adding ideas and helping students learn by expressing their ideas from speaking, writing or doing activities.


Integrated Four Theories
Learning Process
Seven Step Processes of Teaching to Develop a More Extensive Language Skills.
CIPPA Model
Happy Learning Theory
The Communicative Approach
Scaffolding Technique
Physical Participation
Process Learning
Interaction
Application
Construc
1. Warm Up
2. Presentation
3. Practice
4. Production
5. Wrap Up
1. Leading In
2. Attention Pointer
3. Setting Examples
4. Elicitation
5. Practice Creatively
6. Production by Scaffolding Technique
7. Construction & Authentic Assessment
Linking
Adding
Telling
Asking
Helping
Advising
Filling
Building good mental attitude
Know the value of learning
Close to nature or the surroundings
Building self-esteem
Learning socially
Adjusting themselves to the changing world

Teaching Step/ Objective/Activity

Teaching Step	Objective	Activity	Scaffolding Technique
1. Leading In	-To prepare lesson	-Conservation -Songs & games	**Linking** (Ask for linking old and new lesson)
2. Attention Pointer	-To tell lesson objective	-Conservation -Giving Information	**Adding** (Ask for encouragement)
3. Setting Examples	-To present lesson	-Demonstration -Simulation -Role play -Studying text	**Telling** (Ask for presentation new lesson)
4. Elicitation	-To check understanding -To encourage	-Asking for feedback -Conversation -Elicitation	**Asking** (Ask for checking understanding)
5. Practice creatively	-To practice -To choose learning styles -To find the way to learn	-Repetition Drill -Information Gap -Simulation -Role play -Exercise -Group work	**Helping** (Ask for helping while practicing)
6. Production by Scaffolding Technique	-To adapt and apply to various situations	-Integrating Skills -Interviewing -Simulation -Role play -Group work	**Advising** (Ask for advising interesting things to apply)
7. Construction & Authentic Assessment	-To summarize by himself -To evaluate with authentic assessment	-Report -Project work -Exhibition -Authentic Assessment	**Filling** (Ask for filling lesson completely)

Research Methodology

Using one group classroom research
Using pre-test/ post-test

1. **Population and Sample Group**
   The population and the sample group are the same. They are 20 Pratom six students of Wattammikaram School, Amphoe Banmi, Lopburi, Lopburi Educational Area Office 1.
2. **Instrument Employed**
   Four items of Pratom six English teaching plan: Using **Seven step processes of teaching to develop a more extensive language skills**
   One item of English achievement test
   Eight items of pre-test/post-test

Observational checking forms:
-Listening-Speaking skill one item for one plan
-Reading-Writing skill one item for one plan
-Attitude for studying English one item for one plan
Questionnaire asking for students' satisfaction about studying English, using the process

3. **The Instrument Quality Checking**
Make the instrument and have its quality checked by five educational specialists, and revise it as their suggestion.
Analyze the agreement of Index of Objective Coefficient (IOC)
Analyze the level of difficulty and the power of discrimination
Check the reliability by test-retest another group of students twice
4. **Data Collection**
Pre-test/Posttest after using four teaching plans
Pre-test/Posttest after using each teaching plan
Scores from all activities while studying
Efficiency Index(E.I.) checking
Check students' progress
Check teaching Efficiency by Co-efficient Variation(C.V.)
Inquire students' satisfactory for the **Seven step processes of teaching to develop a more extensive language skills**
5. **Data Analysis**
Calculate Mean (x) (and Standard
Deviation(S.D.) of the Pre-test/Posttest result
Check the significant of the Pre-test/Posttest result
Calculate the Efficiency of process(E_1) and Efficiency of result(E_2)
Calculate the Efficiency Index(E.I.)
Calculate the students' process
Calculate the Co-efficient Variation(C.V.)
Calculate Mean (x) and Standard
Deviation(S.D.) of the students' satisfactory : the percentage much be above 3.50

Result, Discussion and Recommendations

Result

1. The achievement test of Pratom six students in learning English after using **Seven step processes of teaching to develop a more extensive language skills** is higher than before studying at .01 level of statistical significance which is in line with criteria set.
2. All the lessons were effective in achieving the set criteria.
3. The students were satisfied with the **Seven step processes of teaching to develop a more extensive language skills** as set in the criteria.

Discussion

1. There are some interesting findings about the achievement test of Pratom six students in learning English and all the lessons using **Seven step processes of teaching to develop a more extensive language skills**.

1.1 Stimulating the students in order to learn anxiously is the best way for the achievement test. Moreover, ask students at the beginning of the lesson about contents, how to learn, activities and materials they want. Then set everything for

learning such as, warm up activity, asking for elicitation while teaching, advising for practice completely and helping them to communicate as much as they can. "… Teachers should encourage students to know, to learn, to ask, to see and to do everything until they understand. They can integrate things they know with everything around and apply them for their real life. …" according to ***The Cognitive Code Learning Theory.*** (Sumittra Angwattanakun. 1997:33)

In addition, using scaffolding technique make students know well by adding ideas, filling things they want to speak, to write or to express language skills for communication. It is believed that if learners get more and more stimulation while studying, it will help them encounter perfectly. (Saowalak Rattanawich.1987:20)

1.2 Studying things from the context will help learners know well as it is said in the ***Happy Learning Theory;*** "… Studying only in the class may be bored and tired. Both teachers and students feel good, fresh and active if they are close to the nature or the surroundings. Naturally, children are researchers who love to survey, to seek and to solve the problems they found around them. They will learn everything by heart. Accordingly, if they know the value of learning - learn to know, learn to be and learn to do, they will learn happily and successfully. …"

1.3 The students themselves learn to correct their work after check and giving some advice by their teacher is the reason for the achievement test. Consequently, learners can develop themselves from their mistake because they know well about work as it is known from the principles of the ***Happy Learning Theory***. "... Knowing strong or weak point of himself, accepting himself, trying to repress, feeling confident, being generous, being ready to improve himself, not to disdain himself and not to blame anybody all around will bring him the achievement.

Besides, always using lesson test is a good technique for practice, since the students should be trained to solve problems all the time.

2. There are the evidence show the relation to the ***Happy Learning Theory***. This is because the lesson being from easiness to difficulty, which is suitable for students' background. What the students should learn is from their surroundings, so that they can easily accomplish the goal of learning. Since they unintentionally gain language experiences by wild varieties of teaching styles; they feel their English lessons are easy to understand, for things they are learning are close to them. This encourages them to express their ideas- giving and asking for information or the students respectively build their communicative abilities. The students are unanimously assessed by various ways; the teacher let them have a chance to evaluate themselves so that they know how to reach their learning goal.

Besides, there is the evidence shows the relation to the students' satisfactory. They are pleased with the surroundings - their classroom, their lessons, their way of learning and their local. Besides, they are proud of their test results, their class work, and their classroom activities since they have chances to participate. In other word, students learn with wide varieties of teaching styles happily and unintentionally achieve learning abilities.

Recommendations for further improvement

1. Stimulating students continually help them accomplish.
2. Teaching steps can be flexible and can be adaptable to suit for another subject.
3. Using various types of tests can help students improve their English.
4. Using questions are effective on English learning achievement so it may help students improve their critical thinking or not.

Improving Form 4 Sc 3 Students' Ability to Construct Sentences in English with the Use of 'SSW' (Super Saver Worksheet)

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Abstract

*My research is based on the 'quality' of students' grades of the English Language paper in the Malaysian Education Certificate (SPM). All 27 students of 4SC3 managed to pass the paper, but the quality of their grades is not too promising. Basically students lack writing skills resulting in them not being able to score high marks in the writing sections of the question papers. Therefore it is my aim to upgrade the students' performance in the English Language paper by introducing the '**SSW**' to the students. It is a very simple worksheet where students have to fill in the grids provided by identifying the subject, the verb, the complement or the object of the sentences. The instruments used to carry out the research are in the form of classroom observation and tests. The items tested are in the form of 'parts of speech' (worksheet on jumble-up words exercise), followed by writing a full composition. The initial finding shows that students have a more positive attitude towards learning English. During the two months since the introduction of the sentence structure worksheet, there is an achievement shown in which students can identify 'parts of speech' that is they get more number of sentences correct (jumble-up words exercise). Maybe two months is quite a short duration to get the desirable result, but the improvement (no matter how small) in the part of the students should be the yardstick for teachers to continue with the activity.*

1.0 TEACHING AND LEARNING REFLECTIONS

I have been teaching Form Four Science students for many years. Being in a science class the expectation was that they have a generally good command of English and supported with the fact that they mostly got A or B in their Secondary Lower Examination (PMR) English paper. Majority (92.55%) of the 4sc3 students scored A, B and C in the PMR English paper in which 71.42% scored A and B. But their actual performance observed in their writings in the whole of January to March did not support that.

From the data that I got after evaluating the students written work, I discovered that the majority showed the following weaknesses – the lack of focus and clarity in the ideas and therefore the lack of development in the compositions. Most of the ideas are disconnected, resulting in mundane compositions. Based on my evaluation of the compositions, there are many weaknesses that prevent my students from getting good marks in their essays. These weaknesses are primarily the lack of ideas (quality and quantity), weak grammar and poor vocabulary.

Still, these students work hard and are bubbly during lessons which are a sign of a positive attitude. They work hard (by using dictionaries and asking friends) to find meanings of

difficult words. Most have no problems when it comes to reading comprehension. The only factor that hinders students from scoring high marks is the fact that they lack writing skills that is they even make mistakes when writing simple sentences. They do not think in English but resort to constructing Malay sentences first in their heads, and then just simply translating them by using dictionaries. And we know that learning a language does not work that way! It is true that some teachers lament that students are not interested to learn English anymore, and I for one do not see this characteristic amongst my students. They know the importance of English, they want to excel, they work hard by cracking their heads translating Malay sentences word by word to do work given by me. To see my students struggling touches my heart and they just need the correct 'tool' to help them. So, I introduced them to **SSW**.

Generally students of Ibrahim Fikri Secondary School are not exposed to the usage of English language in their daily life. Based on the interviews conducted with the students, it was found that the students:

i. Do not write letters, emails or SMS in English
ii. Do not read English reading materials (newspapers, magazines, articles)
iii. Use subtitles to understand English language programmes on TV
iv. Have limited opportunity or exposure to English that is only in English classes
v. Still feel awkward or embarrassed to try using English either among themselves or with teachers

My role as an English language teacher also plays a part as why this research is necessary – the tendency to focus on grammar (teaching it in isolation) and the assumptions that students will somehow understand how English grammar works while dealing with grammar items in isolation and eventually shows that in sentences that they write. This will work with students who are exposed to some kind of English Language outside the classroom, but not my students. English Language teachers in school are their only connection when it comes to English Language. They need more persuasion, more coaching and more innovative ways that 'make sense' to them. And **SSW** makes sense to them.

2.0 FOCUS OF THE RESEARCH

This research focuses on improving the 'quality' of students' grades in the English Language paper. Students managed to pass the paper, but the quality of their grades is not too promising. Basically students lack writing skills resulting in them not being able to score high marks in writing sections of the question paper. It is such that 85 marks are allocated for the testing of writing skills in English Language 1119 paper - directed writing (35 marks) and continuous writing (50 marks). Students do not score high marks as a result of not being able to write correct sentences due to some misunderstanding on English Language sentence structure, resulting in distorted sentences that directly affect the entire message or meaning of a written piece. Students produce dull compositions which are lacking clear ideas. I believe that this is due to the use of dictionary to directly translate Bahasa Melayu (Malay Language) sentences. This misunderstanding on students' part also results in students not being able to write the acquired 350 word essay. When asked '*Why is your essay short?*' the response would be '*I don't know how to write it*' reflecting on students lack of confidence in writing English Language sentences.

Students' low marks in composition writing are basically due to:

i. Failure in presenting clear message or ideas
ii. Failure in using precise vocabulary
iii. Failure in recognising 'parts of speech' resulting in distorted sentences

Here are some of examples of students' 'distorted' sentences:

i. The monkey was picked the coconuts.
ii. Many types of activities.
iii. They enjoyed.
iv. There have many students.
v. We pushed from the house.
vi. When evening, I and him always play together.
vii. I'm very miss and love you.
viii. At there, I saw some cows.
ix. The air in the parks very fresh.
x. I sad.
xi. Research also important to educators.
xii. The selected students from form two.

Some of the errors made by the students are quite puzzling, even to the students themselves, when asked; they failed to give convincing answers to why they wrote such structures repeatedly, year in, year out. My assumption was their lack of familiarity with the positioning of English Language 'parts of speech'. I conclude here common grammar inaccuracies in students' work:

It is quite obvious that these mistakes occurred due to students not being familiar with English Language sentence structures (SV, SVO, SVC, SVOE etc) and most resort to direct translation from Malay Language (as mentioned earlier) and this 'trend' is damaging and worrying and it has become my main concern and thus, this research.

My rationale here is for my students to be able to write correct and meaningful sentences. I want to see my students to be in the Band C of the marking criteria band instead of in Bands D or E.

Excerpt from Band C (32-37 marks) SPM writing marking criteria:

i. language – mainly accurate'
ii. 'sentence structure – simple structure used without error - one type of structure (monotonous)'
iii. 'punctuation – accurate'
iv. 'vocabulary – wide but lack precision'
v. 'spelling – errors in more difficult words'
vi. 'paragraphs – evidence of disorganization'
vii. 'subject matter – lack originality'
viii. 'Interest of reader – aroused but not sustained.

To be in the C Band, as described in the excerpt, students only need to prove that they can write error-free simple sentences which is actually writing basic requirement to come up with good (maybe not great) and meaningful composition. If students were to get marks in the 32-37 band, that guarantees the students to score a comfortable overall credit marks (C6

–B3) for the paper. Hopefully, students will move from here and consequently armed with higher level of confidence, thus a more relaxed approach to improving their writing and the end result would be up to their imagination and ours, teachers, too.

With that in mind, I came up with this strategy to help students write correct, clear meaningful sentences.

3.0 OBJECTIVES OF THE RESEARCH

3.1 General Objective

To upgrade students passes in the 1119 English paper from 64.75% (2007) to 71.00% (2009)

3.2 Specific Objectives

i. Students are able to identify '*parts of speech*' through constant use of '***Super Saver Worksheet***'
ii. Students are able to write correct complete simple, compound and complex sentences
iii. Students are more confidence in writing in English and can write essays by expanding ideas given in exam questions

4.0 TARGET GROUP

The target group consisted of 27 (9 boys and 19 girls) students in 4 Sc 3.

5.0 IMPLEMENTATION OF THE RESEARCH

5.1 Observation of the source of the problem

While evaluating the beginning of the year compositions from January to March 2008 it was discovered that the students' compositions did not show much difference from compositions written from previous year. The demonstrated similar characteristics, most obvious were 'distorted' sentences. Based on the finding, a specific strategy '**SW''** to teach writing sentences was designed to deal with this need.

5.2 Plan in action

Activity 1: 'SINK OR SWIM?'
No Intervention – <u>Pre-Test</u>
(To do the exercise without any teacher intervention)

Step 1: All students were given the '*jumble up words*' worksheet. Students were asked to rearrange the words to come up with 10 individual sentences.
Step 2: Teacher marked students' work, recorded the result and students' work is not returned to them and not discussed with them yet.

Activity 2: 'FREE FOR ALL?'
No Intervention
(To write a full composition without any teacher intervention)

Step 1: All students were assigned a common composition to write: 'Memories'
Step 2: i. Students submitted the essays for teacher's evaluation.
ii. Teacher focuses on sentences used.
iii. Teacher identified/underlined mistakes made by students.
Step 3: Students' mistakes were used for comparison at the end of the research.

Activity 3: 'SUPER SAVER - SSW'
Intervention 1 – Post Test

Step 1**:** Teacher introduced '***SSW'*** to students.

Teacher explained how S (subject), V (verb), C (complement) and O (object) are arranged in English sentences to form simple sentences (combinations of SV, SVC, SVO, SVCO etc). Teacher also explained how complex sentences are formed by adding an E (Elaboration), two Es or even three Es (SVOE, SVOEE etc). Students were told that in order to elaborate the sentences they have to answer the WH-questions (Why, Where, When, Why, How etc). Students then will move on to expanding the sentences (compound and complex sentences) by filling in the spaces for E (expansion). By doing so, students are very much aware of the English Language sentence structures which consist of SV, SVO, SVOE, and SVOEE and so on. I find this to be an easier way of explaining to the students what simple, compound and complex sentences are all about.

Examples of sentences were given to students.

i. Simple sentence -**SVO**
Iman (S) ate (V) the cake (O).

ii. Simple sentence -**SVCO**
Iman (S) ate (V) the delicious(C) cake (O).

iii. Complex sentence -**SVOE**
Iman (S) ate (V) the cake (O) quietly (E-how?).

iv. Complex sentence - **SVOEE**
Iman (S) ate (V) the cake (O) quietly (E-how?) in the kitchen (E-where?).

v. Complex sentence - **SVOEEE**
Iman (S) ate (V) the cake (O) quietly (E-how?) in the kitchen (E-where?) last night (E-when?).

Students were reminded of the English language sentence structures and to always remember the 'formula' before starting to write English sentences.

Step 2**:** Students were given the same '*jumble-up words*' worksheet.

Students were asked to identify '*parts of speech*' among the jumbled-up words and arrange the words based on the grids in the '***SSW'***

Step 3: Teacher marked students' work, recorded the result.

Activity 4: DAMAGE CONTROL
Intervention 2

Step 1**:** Students' essays (titled 'Memories') were returned to them with all the mistakes underlined. Students were asked to do self-correction based on their understanding on the arrangement of '*parts of speech*' as shown on the '**SSW**'.

An example was discussed:

Wrong sentence - *I'm very missing you.*

Teacher used the SVO grid on the '***SSW.*** Teacher asked the students to identify the subject, the verb and the object of the sentence. The sentence should be – I (S) miss (V) you (O). very much (E) - answering to 'how'.

6.0 OBSERVATION AND EVALUATION

The data collected is as shown in the table. The difference in the number of sentences students got it correct between the pre-test and the post test is quite significant. It shows that students are more confident in the placing of 'parts of speech' in sentences. Students would look at the jumble-up words and identify them based on S(subject), V(verb), C(complement-adjective), O(object) or E(expansion).

Table 1
The Result of Pretest and Posttest

Sentences	**No of students with correct sentences**		**Notes**
	Pre-test	**Post test**	
the rose flower is a	**10**	**10**	**-**
now is at Mr.Lee home	**15**	**22**	**+7**
bake I for can you cake the	**23**	**25**	**+2**
weekend she plans for special has this	**11**	**20**	**+9**
often grandparents their they visit	**11**	**23**	**+12**
small walked Arina office into slowly the	**22**	**25**	**+3**
island view love we the panoramic	**5**	**7**	**+2**
began were they playing when rain to it	**3**	**10**	**+7**

Sentences	No of students with correct sentences		Notes
	Pre-test	**Post test**	
The game won we hurray have!	**10**	**17**	**+7**
parents they with came their	**21**	**25**	**+4**

7.0 REFLECTION ON RESEARCH

To begin with, this action research was carried out with the intention to help students improve their sentence structures. As mentioned earlier, distorted sentences hamper reading of an essay and hinder its comprehension. Students have to be aware of the structures (I call it 'formula') and be familiar with them and to start it, students have to religiously have the '***SSW***' next to them every time they want to write a composition. Once they have enough practice, the sentence patterns will be ingrained in them and writing will be a breeze. Having said that, there are still other areas that students need to improve in terms of vocabulary and developing ideas but I think getting sentences correct should be mastered first.

There are many ways in which I have benefited from this research. It has helped me improved my teaching in more ways than one. Planning is very important in teaching of writing and it needs to be broken down into small manageable lessons. On a more personal note, it is misleading to assume that students in form four can write simple sentences (just because they have learned English for 9 years). Yes, some students can write sentences correctly but when asked they are not sure of the rules. They can write because they 'copy' the sentences they have come across in their English lessons or own reading without really knowing the rules. So, '***SSW***' helps weak students to have a beginner's grasp of how to arrange words (parts of speech) in sentences and to make good students aware of the English Language sentence patterns. It is always very important to introduce our English lessons with writing simple sentences and what best and fun way to do it but by arranging words in grids in a worksheet. Students can work on the worksheet individually or it can be splashed on LCD screen or OHP screen for class discussion.

One interesting finding is that when the students were asked to rearrange 'the rose flower is a'. Only two answers were given, either '*The flower is a rose*' or '*The rose is a flower*'. For pre-test, 10 students got it correct and in the post test, the same number of students got it correct. So, the use of the worksheet here did not really help because students could identify the two nouns (*flower* and *rose*) and the verb (*is*). The task is more on logic. The correct sentence has to be able to answer the question '*what is that flower?*', so the answer would be '*The flower is a rose*'. If the students were to say '*The rose is a flower*', that would be to answer to the question '*What is that rose?'* which is not a logical question people would ask.

As for the jumbled-up 'island view love we the panoramic', students were able to identify *we* (S) *love* (V) *the view* (O), but they had trouble in rearranging the C (adjectives '*island*' and '*panoramic*'). That is why there is only a difference of two between the pre-test and the post test. These two significant findings are evidence that our lessons need to be planned with specific objectives and therefore be broken down into small meaningful units.

I'm elated to say that my students' reaction towards the use of **SSW** in my English class is a confident booster for me as a teacher.

8.0 SUGGESTION FOR FURTHER RESEARCH

After having analysed, reflected and observed the findings of the action research, it is recommended that the students be asked to write short paragraphs. Once they master the art of writing simple, complex and compound sentences and are able to write clear correct meaningful sentences, the next level for them to master is to present clear messages and interesting ideas in essays. For example from writing a sentence '*The chicken burger is nice*' to a more descriptive sentence, 'The *sizzling hot chicken burger is mouthwatering*'. Both sentences are relaying the same message that is we like the chicken burger, with the latter being more 'showing' instead of 'telling'. So this would be another aspect of writing that teachers should look into in order to produce good writers among our students.

As mentioned earlier, maybe two months is quite a short duration to get the desirable result, but the improvement (no matter how small) in the part of the students should be the yardstick for teachers to continue with the activity.

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Appendix 1

SSW (Super Saver Worksheet)

&	S	V	C	O	E (how)	E (where)	E (when)	E (why)	E (who/what)

Appendix 2

Ibrahim Fikri Secondary School
English Test

Sentence structures (Jumble-up Words)

Name: Form:

Write complete sentences using jumble-up words below.

1 the rose flower is a
…….

2 now is at Mr.Lee home
…….

3 bake I for can you cake the
……

4 weekend she plans for special has this
……..

5 often grandparents their they visit
…….

6 small walked Arina office into slowly the
…….

7 island view love we the panoramic
……

8 began were they playing when rain to it
……..

9 the game won we hurray have!
…….

10 parents they with came their
……..

Development of Earth System Science in School Curriculum

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Abstract

IPST has developed courses of study on the Earth System Science (ESS) for upper primary and lower secondary level in 2006 to enhance the awareness of individuals throughout the nation to benefit the environment contributing to scientific understanding of the Earth as a system through research-based nd inquiry-based approaches.The curriculum materials comprise student books, teacher' guides and investigation kits.

The students are encouraged to understand the earth system by doing real science in natural setting, learning the key activities needed to practice the scientific inquiry; taking standardized measurement ; using mathematics and information technology in their investigation; learning underlying principle processing govern the behavior of environment; using higher order thinking to inquire; generating research questions from the base of their own observation, knowledge and experiences; seeking answers through inquiry exploring with their own natural curiosity to understand the real world and how to save the world sustainable.

Workshops for teachers and school administrators from 47 pilot schools were conducted in order to be familiar with the guideline materials before implementation in the classrooms and the implementation workshops were arranged in 2009 with 61 schools. The curriculum developers have been visiting schools as mentors for the teachers. Scientists and local wisdoms have been invited to involve with students' researches. It is found that students have learned the relationship among each component of the earth as a system and be aware of the balance of the environment. Students have been mastered scientific inquiry through their researches. It is hope that the Earth System Science Guideline Materials will enhance student's scientific knowledge, scientific skills, critical thinking, and eventually support educational reform.

1. Statement of the Problem

There is growing awareness of global environmental change problem that embodies the nature and consequences of natural and human induced change to the interacting physical , chemical , geological , biological and social processes that regulate the environment supporting human life and influence the quality of life on planet Earth. Understanding Earth as an integrated system of component and processes has become the dominant paradigm in Earth and Space Science research and should

become the central principle in Earth and Space Science education as well. Since 1995 the GLOBE (Global Learning and Observations to Benefit the Environment) program was originated in USA and has been implemented worldwide students-teacher-scientists-community collaboration researches on Earth System Science. The Institute for the Promotion of Teaching Science and Technology (IPST), Ministry of Education has been appointed as the coordinating and implementing agency for the GLOBE Program in Thailand in 2004.

IPST and her partnerships (universities and other organizations) have committed the GLOBE mission with strong intention to enhance the awareness of individuals throughout the nation to benefit the environment contributing to scientific understanding of the Earth as a system, to encourage students, teachers and community to learn and understand the earth system together by doing real science in natural setting, learning the key activities needed to practice the scientific method, taking standardized measurement for quality acceptable for scientific research, using mathematics and technology in their investigations, learning underlying principle processing govern the behavior of environment, using higher order of thinking to inquire, generating research questions from the base of their own observations, knowledge and experiences, seeking answers through inquiry, exploring with their own natural curiosity to understand and how to save the world sustainable.

The Students-Teacher-Scientists-Community Research funding approaches are used to encourage students' Earth System Science understanding and scientific behaviors. The National Science Education Standards: Abilities Necessary to Do Scientific Inquiry and Fundamental Understandings About Scientific Inquiry and the Fundamental Understandings About Scientific Inquiry are used to measure student's Earth System Science scientific inquiry. The research and development of the scientific inquiry based Earth System Science Research guidelines, the Earth System Science Curriculum Materials are carried along. The nationwide implementation of Earth System Science Curriculum Materials are designed and trying out.

2. Research Objective

2.1. To find out the effectiveness of Earth System Science Student-Teacher-Scientist-Community Research approach on encouraging student's Earth System Science understandings and scientific behaviors.
2.2. To find out the effectiveness of 5.1 approach on the students' abilities necessary to do Earth System Science scientific inquiry, measured by National Science Education Standards: Fundamental Abilities Necessary to Do Scientific Inquiry and Fundamental Understandings About Scientific Inquiry.
2.3. To use the findings from objectives 5.1 and 5.2 to do the research and development of inquiry based Earth System Science Research guidelines.
2.4. To try out the effectiveness of the Earth System Science Research guidelines in 5.3 on encouraging student's Earth System Science understandings and scientific behaviors in sample schools
2.5. To use the findings from objectives 5.1 – 5.4 to do the research and development of the development of inquiry based Earth System Science Curriculum Materials.

2.6. To use the findings from objectives 5.1 – 5.5 to do the research and development of nationwide implementations of inquiry based Earth System Science Curriculum Materials.
2.7. To use the findings from objective 5.1 – 5.6 to do the research and development of nationwide enhancing Earth System Science knowledge and activities through collaborative efforts among concerned governmental and private organizations.

3. Research Hypothesis

3.1 The Earth System Science Student-Teacher-Scientist-Community Research approach encourages the student's Earth System Science understanding and scientific behaviors
3.2 The Fundamental Abilities Necessary to Do Scientific Inquiry and Fundamental Understandings About Scientific Inquiry of the students, exposing and nurturing through students Earth System Science (Students-Teacher-Scientist-Community) Research funding approaches are higher than the ones who are not exposed to those approaches and nurturing.
3.3 The findings from objectives 6.1 and 6.2 are possible and valuable to do the research and development of inquiry based Earth System Science Research guidelines.
3.4 The developed inquiry based Earth System Science Research guidelines are effective on encouraging student's Earth System Science understanding and scientific behaviors in sample schools.
3.5 The findings from objectives 6.1-6.4 are possible and valuable to do the research and development of the development of inquiry based Earth System Science Curriculum Materials.
3.6 The findings from objectives 6.1-6.5 are possible and valuable to do the research and development of nationwide implementations of inquiry based Earth System Science Curriculum Materials.
3.7 The nationwide enhancing Earth System Science knowledge and activities through collaborative efforts among concerned governmental and private organizations are possible and valuable.

4. Research Methodology

Phase I Preliminary Study

1. Population
   909 students from 303 schools
2. Sample
   436 students from 218 schools
3. Variables
   3.1. Fundamental Abilities Necessary to do Scientific Inquiry of the students
   3.2. Fundamental Understandings About Scientific Inquiry of the students
   3.3. Fundamental Understandings About Scientific Inquiry of the teachers
4. Research Instruments
   4.1. National Science Education Standards : Fundamental Abilities to Do Scientific Inquiry (National Research Council : 19)

4.2. National Science Education Standards : Fundamental Understandings About Scientific Inquiry (National Research Council : 20)

5. Data Collection
   5.1. Qualitative analysis of student's scientific inquiry by using the National Science Education Standards : Fundamental Abilities Necessary to do Scientific Inquiry
   5.2. Qualitative analysis of student's scientific inquiry by using the National Science Education Standards : Fundamental Understandings About Scientific Inquiry
      a) Grade 5-8 student's Earth System Science research proposals before Earth System Science Research Training Workshop
      b) Grade 5-8 student's Earth System Science research proposals revising under supervisions of the scientists during Earth System Science Research Training Workshop (students-teachers-scientist-community collaboration research workshop)
      c) Grade 5-8 student's Earth System Science research proposals carried out at students actual research proposal study site and request for approval and funding from IPST
      d) Grade 5-8 student's Earth System Science reports (of approval and funding proposals in c)
      e) Selected grade 5-8 Student's Earth System Science research reports (from research reports in d) to present at national and international GLOBE Earth System Science conferences

5. Data Analysis

5.1. Using the National Science Education Standards : Fundamental Abilities to Do the Scientific Inquiry (Rubric Scoring) to analyze students scientific inquiry:
- Identify question that can be answered through scientific investigations.
- Design and conduct a scientific investigation
- Use appropriate tools and techniques to gather, analyze and interpret data
- Develop descriptions, explanations, predictions and models using evidence
- Think critically and logically to make the relationships between evidence and explanations.
- Recognize and analyze alternative explanations and predictions.
- Communicate scientific procedures and explanations.
- Use mathematics in all aspects of scientific inquiry

5.2. (National Research Council: 19)

5.3. Using the Fundamental Understandings About Scientific Inquiry
- Different kinds of questions suggest different kinds of scientific investigations
- Current scientific knowledge and understanding guide scientific investigations
- Mathematics is important in all aspects of scientific inquiry
- Technology used to gather data enhances accuracy and allows scientists to analyze and quantify results of investigations
- Scientific explanations emphasize evidence, have logically consistent arguments and use scientific principles, models, and theories.

- Scientific investigations sometimes result in new ideas and phenomena for study, generate new methods or procedures for an investigation, or develop new technologies to improve the collection of data
- (National Research Council: 20)
- to analyze
    1) Student's research proposals before Earth System Science training workshop.
    2) Student's revising research proposals under supervisions of the scientists during Earth System Science training workshop (Student-Teacher-Scientist-Community Research workshop)
    3) Student's Earth System Science research proposals carried out at student's actual study sites and request for approval and funding from IPST.
    4) Student's Earth System Science research reports (of approval and funding proposals in 3)
    5) Selected Student's Earth system Science research reports (from research reports in 4) to present at national and international GLOBE-Earth System Science conferences.

5.4. Categorize the level of each student's Fundamental Abilities Necessary to Do Scientific Inquiry (Rubric scoring) into 5 categories, Excellent, Very Good, Good, Fair, and Poor.

5.5. Categorizing the level of each student's Fundamental Understandings About Scientific Inquiry (Rubric Scoring) into 5 categories: Excellent, Very Good, Good, Fair, and Poor.

5.6. Analyze the problem of teaching, learning, advising processes underlying student's Fundamental Abilities Necessary to Do Scientific Inquiry About Scientific Inquiry on Earth System Science researches shown in each student rubric scoring categories in 8.3

5.7. Analyze the problem of teaching, learning, advising processes underlying student's Fundamental Understandings About Scientific Inquiry on Earth System Science researches shown in each rubric scoring categories in 8.4

5.8. Using results from 8.1 – 8.6 to be the guideline for scientifically revise and develop the Earth System Science Research guidelines and develop more meaningful and more scientific Earth System Science Curriculum Materials: Earth System Science Teacher's Guide, Student Earth System Science book I (for grade 4-6) and Student Earth System Science book II (for grade 7-9)

6. Result and Discussion

6.1. Using the **National Science Education Standards : Fundamental Abilities Necessary to Do Scientific Inquiry** (Rubric Scoring) to analyze student's scientific inquiry .

6.1.1. "**Identify questions that can be answered through scientific investigations**"

It was found that for overall stages of proposal developing, only approximately one third of all sample students are in the "fair" level, the others are in "poor" level which effect all of the rest fundamental abilities necessary to Do Scientific Inquiry. This

might be because of identifying research questions in the term of unknown interconnectedness and interrelationship of the environmental components in natural setting of Earth System Science Research is the new process approach. The teachers have been embedded in the traditional processes approach of teaching science by proving facts of known questions by known experimental designs for a long time. They don't have enough Fundamental Abilities Necessary to Do Scientific Inquiry themselves to be able to lead students to do scientific inquiry on Earth System Science research in natural setting.

6.1.2. "**Design and conduct a scientific investigation**"

In average fundamental abilities to design and conduct scientific investigations of about half of the sample students are only "fair" due to the limitations of identifying Earth System Science research questions ability of the students.

6.1.3. "**Use appropriate tools and techniques to gather, analyze and interpret data**"

Approximately most of sample students have shown the "fair" fundamental abilities to use appropriate tools and technique to gather, analyze and interpret data correspond to research questions using the specific and standardized protocol for each measurement but those abilities are not meaningful because of the unscientific of their research questions.

6.1.4. "**Develop descriptions explanations, predictions and models using evidence**"

The fundamental abilities to develop descriptions, explanations and models using evidence of most sample students are "poor" because they don't have enough observations of the interconnectedness and interrelationship of the environmental components in natural setting. They don't have inquiry mind to question, to search for concerning fundamental knowledge or to do underlying literature review of those relationships.

6.1.5. "**Think critically and logically to make the relationships between evidence and explanations**"

Most of sample students can not think critically to make relationships between evidences and explanations because they have a few chances to be encouraged to do so due to the limitation of the teacher's abilities to do so themselves and to lead them.

6.1.6. "**Recognize and analyze alternative explanations and predictions**"

The fundamental abilities to recognize and analyze alternative explanations and predictions of most sample students are "poor" because they are not encouraged to be aware of enough observations for evidences and searching for other related knowledge and research findings.

6.1.7. "**Communicate scientific procedures and explanations**"
Most of the sample students have limited abilities to communicate scientific procedures and explanations because of limited experiences of the teachers to train them to do so.

6.1.8. "**Use mathematics in all aspects of scientific inquiry**"
The fundamental abilities of most sample students to use mathematics in all aspects of scientific inquiry are automatically fair but not quite indicate higher order of thinking of the research processes.

6.2. Using the **National Science Education Standards: Fundamental Understandings About Scientific Inquiry**

6.1.1. Different kinds of questions suggest different kinds of scientific investigations
Most of the sample students do not understand that the complex interrelationships of Earth System Science nature of questions need to cover all related variables with specific investigations of each variable.

6.1.2. Current scientific knowledge and understanding guide scientific investigations
Almost all of them do not realize that, to understand, to know how to answer the interconnectedness of natural phenomena, they have to search for background knowledge underlying each relationship of observed evidences in natural setting from reliable resources and also from related literature review of the related known knowledge to be able to hypothesize and answer the questions effectively.

6.1.3. Mathematics is important in all aspects of scientific inquiry
Most of the students never have a chance to recognize the important of using mathematics to search for scientific answers of the research questions because they almost never been taught about the important of reliability of quantitative scientific data that influence the scientific research results..

6.1.4. Technology used to gather data enhances accuracy and allows scientist to analyze and quantify results of investigations
Most of students are excited to accurately measure all isolated environmental factors by using scientific instruments or technologies but they still don't understand why they want to do so, to answer what question.

6.1.5. Scientific explanations emphasize evidence, have logically consistent arguments and use scientific principles, models and theories
Most of the students understanding of the scientific aspects of inquiry are poor. They almost never have been taught to use scientific principles models and theories to explain any observing natural phenomena.

6.1.6. Scientific investigations sometimes result in new ideas and phenomena to study, generate new methods or procedures for an investigation or develop new technologies to improve the collection of data
Some students who are exposed to nature in rural areas are able to collect data in natural setting by available procedures, instruments

and technologies that their community have used, but they still unable to understand why they do so, to answer what questions.

7. Recommendation

The research results have shown that : to enhance the awareness of individual throughout the nation to benefit the environment contributing to scientific understanding of the Earth as a System, the students and teachers must be supported and nurtured across the curriculum to master Fundamental Abilities Necessary to Do Scientific Inquiry and the Fundamental Understandings about Scientific Inquiry to understand the Earth system by doing real science in natural setting. In doing so, the curriculum developers need to be aware of the facts that the "Fundamental Abilities Necessary to Do Scientific Inquiry and the Fundamental Understandings About Scientific Inquiry on Earth System Science research in natural setting approach" go beyond what have been termed science "process" skills, such as isolated observations, inferences and experimentations. Earth System Science Inquiry abilities require students to mesh these processes with scientific knowledge as they use scientific reasoning and critically thinking to develop their understanding of Earth System Science. The students and teachers must be lead to move away from such traditional approach. They must be encouraged to participate in the evaluation of scientific knowledge. In each step of inquiry they need to ask "what are the variables count for the environmental interrelationship that they have observed? What data they should collect? Students and teachers should ask "What counts? What data do we keep? What data do we discard? What patterns exist in the data? Are these patterns appropriate for this inquiry? What explanations account for the patterns? Is one explanation better than another? In justifying their decision, students ought to draw on evidence and analytical tools to derive a scientific claim. In turn students should be able to access both the strengths and weaknesses of their claims. The development and evolution of knowledge claims, and reflection upon those claims underlie the inquiry abilities". (National Research council : 18-19)

Phase II The research and development of the development and implementation of inquiry based Earth System Science Curriculum Materials

The findings from the first phase of this research indicate that students understanding of the Earth System Science, students' Abilities Necessary to Do Scientific Inquiry and student's Fundamental Understandings About Scientific Inquiry in doing Earth System Science researches are low even by using students – teacher – scientist - community research approach. The reasons might be because of the students and teachers are not quite exposed and familiar with free ranging explorations of unexpected phenomena of complex interconnections and interrelationships of the environmental components in natural setting of Earth System Science researches. Such unstructured investigations of unknown interrelationships of natural world need high cognitive abilities, open-ended inquiry or active inquiry to do real science as scientific inquiry of practicing scientists.

The challenges of successfully implementing Earth System Science Inquiry in the schools is to create educational system that provide the teachers and students to naturally develop their scientific understandings and abilities to

scientifically inquire as the diverse ways in which scientist study the natural world, propose explanations based on the evidences derived from their observations, develop knowledge and understanding of scientific ideas as well as an understanding of how scientist study the natural world.

To effectively nurturing and facilitating the Teachers and students understanding of the nature of Earth System Science", the Teachers and Students "Fundamental Abilities Necessary to Do Scientific Inquiry and the Fundamental Understandings About Scientific Inquiry" in Earth System Science research and concepts, the Earth System Science Curriculum Materials : Earth System Science Teacher's Guide, Earth System Science Student Book I (for grade 4-5 students), Earth System Science Student Book II (for grade 6-8 students) are designed, and developed.

A. The Earth System Science Teacher's Guide

The Earth System Science Teacher's Guide offers the teachers to understand the nature of Earth System Science and facilitate the students to be able to understand and demonstrate scientific inquiry.

Earth System Science Teacher's Guide content

I. Background knowledge about Earth System Science.

II. Objectives of learning Earth System Science through scientific inquiry and research approach

III. Fundamental Abilities Necessary to Do Scientific Inquiry in Earth System Science

i. How to identity Earth System Science research questions (specific characteristics and examples of Earth System Science research questions).
ii. How to design and conduct a scientific Earth System Science investigation (specific characteristics and examples)
iii. How to use appropriate tools and techniques to gather, analyze and interpret data (specific characteristics and examples)
iv. How to develop descriptions, explanations, predictions, and models using evidence (specific characteristics and examples)
v. How to think critically and logically to makes the relationships between evidences and explanations (specific characteristics and examples)
vi. How to recognize and analyze alternative explanations and predictions (specific characteristics and examples)
vii. How to communicate scientific procedures and explanations (specific characteristics and examples)
viii. How to use mathematics in all aspects of scientific inquiry (specific characteristics and examples)

IV. Fundamental Understanding About Scientific Inquiry

i. Different kinds of questions suggest different kinds of scientific investigations (specific characteristics and examples)
ii. Current scientific knowledge and understanding guide scientific investigations. (specific characteristics and examples)
iii. Mathematics is important in all aspects of scientific inquiry. (specific characteristic and examples)

iv. Technology used to gather data enhance accuracy and allows scientists to analyze to quantify results of investigations. (specific characteristics and examples)
v. Scientific explanations emphasize evidence, have logically consistent arguments and use scientific principles models and theories. (specific characteristics and examples)
vi. Scientific investigations sometimes result in new ideas and phenomena for study, generate new methods or procedures for an investigations or develop new technologies to improve the collection of data. (specific characteristics and examples)

B. The Earth System Science Student Book I

C. The Earth System Science Student Book II

The Earth System Science Student Book I and II focus on Earth System Science inquiry activities that facilitate the student's Fundamental Abilities Necessary to do Scientific Inquiry and the Fundamental understandings about Scientific Inquiry in doing Earth System Science researches in natural setting to understand the natural world.

Earth System Science Curriculum Implementation and Mentoring Processes

I. Implementation Processes

i. Select the Earth System Science funding research schools who are interested to try out using the developed inquiry based Earth System Science curriculum materials in schools for 108 schools to be the implementation schools.
ii. Visit the implementation schools
Observe and collect data on the implementation's success and problems of the schools
iii. Arrange Earth System Science Training Workshops focusing on Earth System Science Research strategies.
1) First Earth System Science Training Workshop
- For 20 talented Earth System Science teachers from 20 schools who perform best qualified researches (Students – Teacher – Scientist – Community - Collaboration Research). Training by the GLOBE Program, IPST trainers. The results are very good.

2) Second Earth System Science Training Workshop
- For 56 teachers from 36 schools who are interested in implementing the Earth System Science in school curriculum. Training by the GLOBE Program IPST trainers and talented Earth System Science Teachers (selected from the implementation schools) trainers. The results are good

3) Third Earth System Science Training Workshop
- For 40 Mathematics and Science talented teachers from 31 schools. Training by the GLOBE Program IPST Trainers and the Project for the Promotion of Science Mathematics Talented Teachers (PMST) trainers. The results are very good.

4) Forth Earth System Science Training Workshop
- For 75 Science Schools Project Teachers from 40 schools. Training by the GLOBE Program IPST trainers and the Development and

Promotion of Science and Technology Talents Project (DPST) trainers. The results are very good.

iv. Providing Earth System Science Curriculum Materials for all teachers and students of all implementation schools

II. Mentoring Processes

i. The 56 teachers from 56 implementation schools are invited to the First Earth System Science Follow Up and Professional Development Workshop: -

1) To share the Earth System Science Curriculum Materials implementation experiences

2) To learn more on how to effectively use Earth System Science Curriculum Materials to encourage the student's Fundamental Abilities Necessary to do Scientific Inquiry and Fundamental Understandings about Scientific Inquiry in learning Earth System Science by doing scientific research in natural setting approaches.

3) To identify the problems of encouraging the student's Abilities Necessary to do Scientific Inquiry and Fundamental Understandings about Scientific Inquiry to learn Earth System Science by doing scientific research in natural setting approach.

4) To identify the problems of encouraging the teachers to be able to understand and use the National Science Education Standard on Student Abilities Necessary to do Scientific Inquiry and Fundamental Understandings About Scientific Inquiry to effectively encourage and assess the student's competencies in using those abilities in learning Earth System Science by doing scientific research in natural setting approaches.

ii. The results of the workshop are positive and constructive. The other follow up workshops for the other groups of teachers are plan to do in the future

Results and Discussion

1. The development of inquiry based Earth System Science Curriculum Materials are qualified for being based on the analysis of student's Fundamental Abilities Necessary to Do Scientific Inquiry and Fundamental Understandings About Scientific Inquiry as the data for the development.

2. The implementation strategies of the developed Earth System Science Curriculum in schools including teacher's professional development, mentoring processes and follow up activities are in the right direction for being based on the same research and development strategy of using National Science Education Standards : Inquiry abilities in 1)

3. From the finding of 1) and 2), suggest that to enhance the effectiveness of teacher's professional development in encouraging student's scientific inquiry in doing real science of Earth System Science researches, the teacher should be encouraged and mentored through individual practice and group discussions of analyzing the students scientific inquiry in doing Earth System Science researches in natural setting works, research proposals and research reports by using National Science Education Standards : Fundamental Abilities Necessary to do Scientific Inquiry and Fundamental

Understandings about Scientific Inquiry rubric scoring to empowered themselves to understand and posses scientific inquiry to be able to help the students to do real science on Earth System Science.

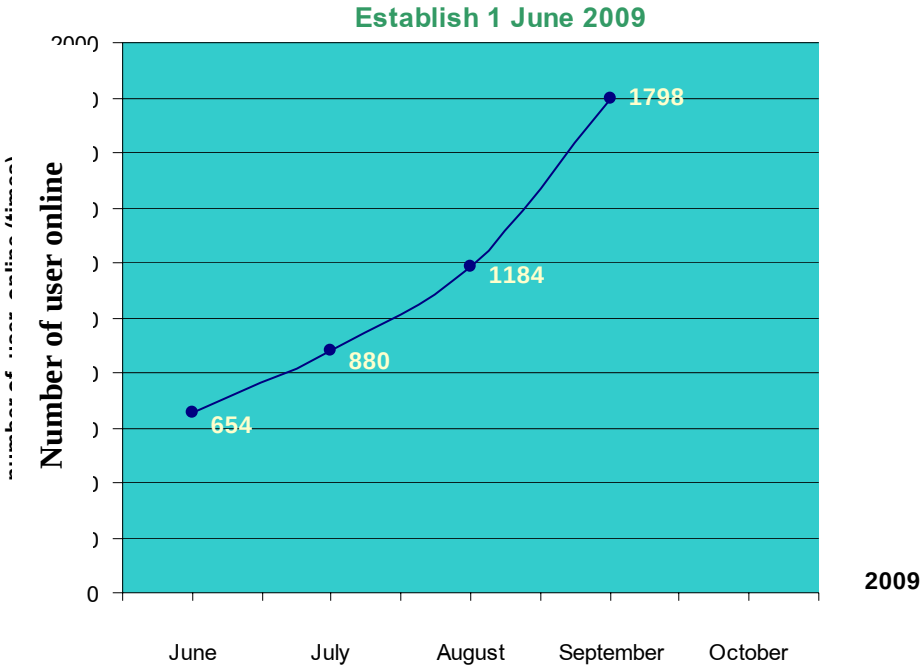
4. To support effective implementations and mentoring strategies the Earth System Science website has been developed and publicized since June 2009 to provide nationwide the Earth System Science information for concerned educational organizations, including schools, universities, and the other organizations, including general public. To encourage student's and teacher's Earth System Science concepts and scientific inquiry to understand the interconnections and interrelationship among the Earth System Science components, including science process skills to research and acquire the Earth System Science knowledge.

   This website is the communicating channel for those people who are interested in the Earth System Science projects and activities to publicize the Earth System Science curriculum materials, Earth System Science Teacher's Guide, standardized Earth System Science protocols, example Earth System Science Student Book I (grade 4-6), Earth System Science Student Book II (grade 7-9) in the form of e-book, example of selected student's Earth System Science research, sharing the Earth System Science ideas through web board including questions and answers, download data, real-time chat on student's research and curriculum complementation, Earth System Science related research website. At present, there are 1798 times of public who interested in website and 63 Earth System Science registered.

   The benefit of the Earth System Science of registered members
   1. be able to download all provided Earth System Science information
   2. be able to establish new topics in all web board including general board, science board and news board

   The one who register can ask their own questions and discuss the other's questions, and download the information. The one who are not the registered can not ask their own originated questions and can not download the information. They can only discuss the questions that has been asked by the others. The number of user online are shown below

C Cumulative number of user online of ESS website



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Push And Pull: Green Beans' Cars Race

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Abstract

The action research was done to help to solve the pupil's problem in making statement in fair test. Thirty pupils from Year 2 Arif of the Bandar Uda (2) National Primary School in Johor were selected as the target group in this study. Problem facing this class was that they were not able to make a statement fair or unfair in a Push and Pull test. The researcher try to make more serious activity that involved pupils in the making and hopefully the portable circuit can be help them to be clearer about Push and Pull. There are many factors to get the precise result so hopefully the portable circuit with the Green Beans Cars can help pupils identify the factors and lets them think.

1.0 PROBLEM IDENTIFICATION

Push and pull is the last topic for Year 2 in the Theme 2: Learning about the World around Us, in the Malaysian science primary school syllabus and it quite interesting activity for the pupils. The learning outcomes of the topic required the pupils to be able to predict objects that will travel the furthest, able to measure distances in appropriate units, and able to make *suggestion and reasons whether a test is fair or not*. While conducting the teaching and learning session for Lesson 3: Push, Pull and the Size of Objects at Year 2 Arif; the researcher found that most of the pupils *were not able to make a statement fair or unfair* from the previous activity that they had being doing together. Supposedly, the harder they push and pull, the furthest the object moves and it depends on their sizes. However their results were reversed (the other way round). Due to this experience, the researcher seeks to answer the following questions:

i. What are the causes of pupils' difficulty in making statement fair or unfair in the activity?
ii. What are the other possible factors that could be done to them to make them think out of the box?

Action research was done to the answer the above questions by the researcher on her own class.

2.0 ANALYSIS OF PROBLEM

In the preliminary activity conducted by the researcher, most of the pupils of Year 2 Arif were observed to understand the flow of the activity. That is 'if you push or pull harder the objects move faster'. When it turns to the other way and not given needed result they keep thinking. They communicated to each other and some said that teacher was teaching wrong to them. From here, the researcher explained that there are many factors involved to get a

precise result. Maybe it was out from the syllabus but it can make the pupils think beyond their standard.

3.0 OBJECTIVES

The research objectives are:

a) To improve the ability of pupils prediction.
b) To arose the pupil's interest towards science subject.
c) To make the pupils do their own research and daily observations for increasing their science knowledge.
d) To improve the pupil skills in answering the test and examination questions.
e) To make them feel more important with the involvement of their teacher in the activities.

4.0 TARGET GROUP

Thirty pupils from Year 2 Arif were selected as the target group in this study, comprises of 13 boys and 17 girls.

5.0 RESEARCH PROCEDURES

5.1 Strategy Development

The researcher will outline the specific activity needed to solve the problem. In the previous activity, she used two toy cars in the same sizes and weights and did it at the Science Room's floor in front of the pupils. Two pupils were involved namely pupil A and pupil B and they were the same weights. As they executed the process other pupils will watch it and make a statement, fair or unfair. The selected pupils pushed each toy cars together at the same time. Even they had same weight and same size of cars it could not make a sense. The results supposed to be the same but it was different. The reading from pupil A is 5 cm and pupil B was 7 cm. The reading must the same and it really makes other pupils confused. Then, the researcher did the other activity but this time, it involved the same weight of pupils, namely pupil X and pupil Y. They will have different toy cars which are small and big size and definitely have different weights. In pupils understanding, the small size of toy car will move faster than the big toy cars. The same thing happened; the result confused the pupils. The big toy car moved faster and makes it to 8 cm but then the small toy car can only make to 6 cm. The pupils were confused in making statements fair or unfair.

► **First Activity:**

Pupils	Pupils' Size	Toy cars' Size	Action	Distance	Fair or Unfair
Pupil A	**Small boy**	**big**	**Push the *same* size toy cars at the same time from the starting line to the furthest distance that they can.**	**5 cm**	**Leave by pupils**
Pupil B	**Small boy**	**big**		**7 cm**	**Leave by pupils**

► **Second Activity:**

Pupils	Pupils' Size	Toy cars' Size	Action	Distance	Fair or Unfair
Pupil X	**Big girl**	**small**	**Push the *different* size of toy cars at the same time from the starting line to the furthest distance that they can.**	**6 cm**	**Leave by pupils**
Pupil Y	**Big girl**	**big**		**8 cm**	**Leave by pupils**

Then, the researcher find out that she will make the activity seriously with the different tools, places and situations. From the *Think- Pair- Share plan* (please refer to references) between other Science teacher, she will make the portable circuit with teachers' helps and create the toy cars with the pupils.

The problems are:

i. Even the cars were different in sizes, they cannot get the satisfy results and they get confuse to make their statement fair or unfair.
ii. Even the pupils who were pushing the cars were same sizes, the result still the same.
iii. Teacher cannot change the result but can make general ideas to tell them the activities were not wrong.
iv. Teacher need to invent other solution to overcome the problem in the systematic manner.

6.0 RESOURCES IDENTIFICATIONS

This section is divided into two parts. First, creating the toy cars with pupils' involvement and then creating the portable circuit with science teachers.

6.1 Green Bean Cars Race

The materials used creating the toy cars are from the recycled materials that can found at home or school compound. There are:

2 unused plastic bottles will be put 4 tires to be like a car

Green beans will be put inside the plastic bottle as their weight

6.2 [illegible]

The portable circuit is made from the wood that can be found at the hardware store and take several days to finish it.

Several pieces of wood plank as a circuit for about 18" length

6.3 Project Costing

Almost all the materials are taken from the recycled materials that easily found at our home and compound. The materials are cheap and affordable.

Materials	Quantity	Price (unit) / RM	Total (RM)
Iron nail	10 pieces	1.00 / 10 pieces	1.00
Raw green beans	200 gram	4.50 / I kg	90 cent
Wood plank	5 pieces	12.OO / 1 piece	60.00
Color paper	10 pieces	4.00 / 10 pieces	4.00
Plastic bottle	2 pieces	recycled	-
Small tires	2 pieces	recycled	-
Iron rode	4 pieces	recycled	-
		TOTAL	65.90

7.0 PROJECT OBSTACLES

Some obstacles hinder the success of the project, so it is important to identify the obstacles and solutions early as follows:

i. Enough time to finish the circuit and cooperation from teacher are needed. If not, the researcher will try to start the project two months earlier before the syllabus finish.

ii. Difficult to understand and fill the Think-Pair-Share form. The discussion with other teachers will help to overcome the weaknesses.

iii. Only a few pupils can be involved in The Push and Pull: Green Beans Cars Race session. Teacher demonstration in front of the class will solve the problem. If some of the pupils cannot give feedback they can seek help from their friends.

8.0 PROJECT TIMELINE

Green Beans Cars Race Monthly Timeline

Activities \ Month	JUL	AUG	SEP	OCT	NOV
Data collection					
Identify the problems and analysis the problem					
Start doing the project–Green Beans Cars with Year 2 Arif pupils					
Start doing the project-Portable circuit with other teacher					
Green Beans Cars Race Execution					
Analysis the result					
Make adjustment in the teaching if the action research success.					
Apply the action research in the teaching					

9.0 GREEN BEANS CARS RACE EXECUTION

To make pupils understand more, three factors were added in the observation form. The factors are places, condition of surrounding and pupils attentions.

9.1 Factor 1: Places where the race is held

Pupil	Places	Toy cars' size	Pupils' size	Activity	Distance (cm)	Fair or Unfair
Pupil A vs. Pupil B	**Science Room**	**Same size**	**Small**	**Push the *same* size toy cars at the *same* time from the starting line to the furthest distance that they can.**	**18**	**Fair**
Pupil A vs. Pupil B	**School Field**	**Same size**	**Small**		**12**	**Unfair**

Reason: The toy Green Beans Cars was pushed on the floor of the science room and at the school field. It become ***unfair*** because the condition(place) was unsuitable even though their sizes were the same.

9.2 Factor 2: Condition of surrounding

Pupil	Surroun ding	Toy cars' size	Pupils' size	Activity	Distance (cm)	Fair or Unfair
Pupil X vs. Pupil Y	Windy	Same size	Small	Push the *same* size toy cars at the *same* time from the starting line to the furthest distance that they can.	15	unfair
Pupil X vs. Pupil Y	Not so windy	Same size	Small		20	Fair

Reason: The toy Green Beans' Cars was pushed in the different surrounding. It become ***unfair*** because the weather was unsuitable even though their sizes were the same.

9.3 Factor 3: Pupils' attention

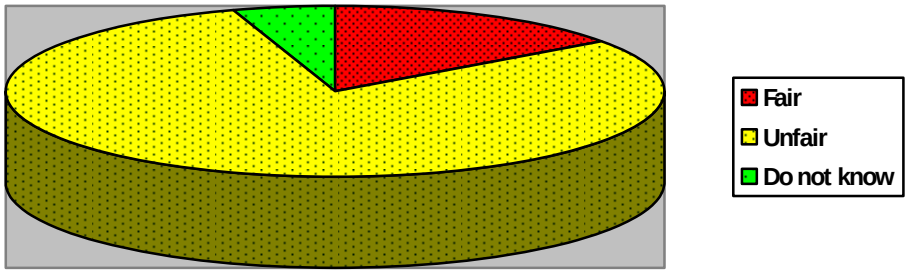
Pupil	Attention	Toy cars' size	Pupils' size	Activity	Distance (cm)	Fair or Unfair
Pupil E vs. Pupil F	Noise and other pupils were playing around	Same size	Small	Push the *same* size toy cars at the *same* time from the starting line to the furthest distance that they can.	6	Unfair
Pupil E vs. Pupil F	Calm and other pupils took their seats nicely	Same size	Small		12	Fair

Reason: The toy Green Beans Cars was pushed in the different pupils' attention. It become ***unfair*** because the condition of the unsuitable attention even though their sizes were the same. The pupil might be stressed and not ready to play.

10.0 RESULT ANALYSIS

All responses were analysed based on three factors are follows:

10.1 Factor 1: Places where the race was held



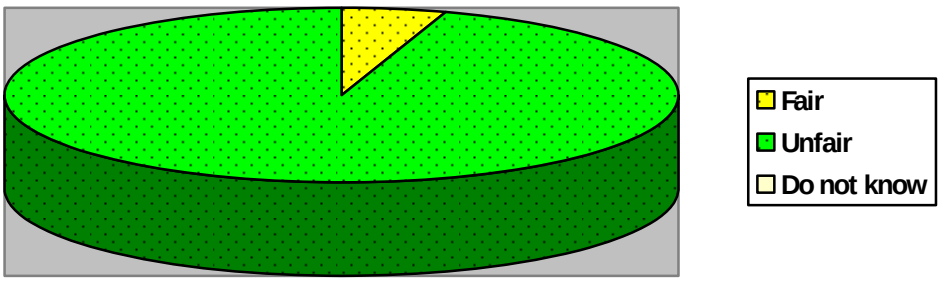
10.1.1 Reflection

Most of the pupils are still new in the activity and they do not really understand what was happened. After the researcher explained for several times and now they can understand. Pupils A and B did the activity, the others observed and filled in the observation form. The results are as below:

1. Pupils who answered the activity was fair: 15%
2. Pupils who answered the activity was unfair: 80%
3. Pupils who answered do not know the answer: 5%

(*Observation form can be refer at the references*)

10.2 Factor 2: Condition of Surrounding



10.2.1 Reflection

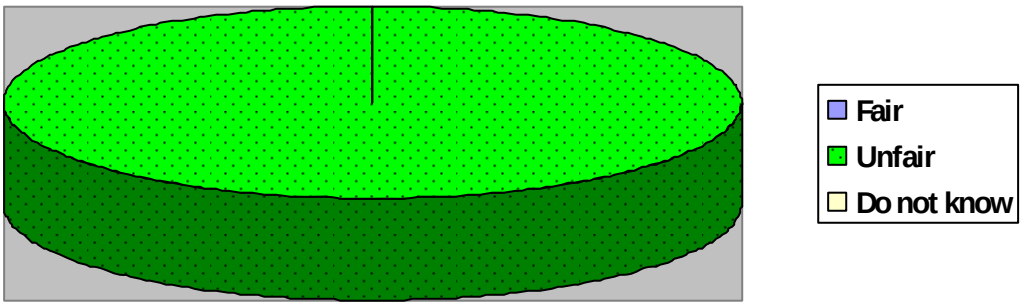
For the second round of activity, pupils became more excited. Most of them were supporting their favorite friend and hope they are doing well. Pupils X and Y did the

activity; the others observed and filled in the observation form. There are some progresses at this stage because pupils start to understand. The results are as below:

1. Pupils who answered the activity was fair: 5%
2. Pupils who answered the activity was unfair: 95%
3. Pupils who answered do not know the answer: nil

(*Observation form can be refer at the references*)

10.3 Factor 3: Pupils' attention



10.3.1 Reflection

For the last round of activity, showed that they can think by themselves. When, pupils E and F did the activity; the others observed and filled in the observation form. The results are as below:

1. Pupils who answered the activity was fair: nil
2. Pupils who answered the activity was unfair: 100%
3. Pupils who answered do not know the answer: nil

(*Observation form can be refer at the references*)

11.0 REFLECTION

From the researchers' view, the action research was successful and helps in her teaching. Her pupils can make their own statement without her help. Besides, the pupils seem happy when they were involved in the making of green beans' cars. They also interested to do the next activity with the researcher. Even it's very hard from the beginning to make them understand the purpose of the activity; however they agreed that the activity was helping them. It is a challenge to teach other classes but the researcher will try the best. For her, the activity cannot solve all problems but it can make her pupils clearer about making statement and helps them at the higher level, Level 2. Even there are weaknesses she hopes it will make her pupils feel happy to learn Science because Science is life.

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APPENDIX A
~Think – Pair – Share Form~

Questions	What I thought?	What my partner thought?	What are we decided to share?
What are we going to do?	A portable circuit that can be test following the factors stated.	1 agreed	**Do the friendly portable circuit and pupils can test by themselves**
What pupils can achieve from the action research?	Pupils able to make their own statement of fair or unfair	Pupils still need teacher helps to make the statement especially for the last classes.	**Teacher should help them and involved them as in the process of activity.**
Do pupils can understand what are we going to do?	Yes, if we explained clearly	Maybe, but it quite hard	**Try to revise so many times especially for the last class.**

APPENDIX B
~Sample of an Observation Form ~

Name : _____

Class : _____ Date : _____

Factor 1/2/3: _____

Please fill in the form

Pupil	Places	Toy cars' size	Pupils' size	Activity	Distance (cm)	Fair or Unfair
Pupil E	**School Field**					
Pupil F	**Science Room**					
Pupil E	**School Field**					
Pupil F	**Science Room**					

Factors Affecting Vocational Managerial Successes of Colleges under the Office of the Vocational Education Commission

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Abstract

The purposes of the research were to: 1) examine levels of factors affecting success in management educational institutions; 2) examine levels of success in management educational institutions; and 3) develop a model of straight linear structure relationships of the factors affecting success in management of educational institutions, comprising 6 factors; administrative resources, biosocial characteristics of the administrators, biosocial characteristics of the teachers, administration of the administrators, work performance of the teachers, and learning of the students.

The sample consisted of: 1) 17 qualified persons purposively selected; 2) administrators and teachers, obtained by stratified Random Sampling total 1,225 subjects. The instruments for collecting data were a structured-interview form and a 5-rating-scale questionnaire with discriminating powers ranging .38 to .90 and a reliability of .98. Qualitative data were descriptively analyzed. Basic Statistics, and Pearson product-moment correlation coefficient were analyzed by using computer program, the straight linear structure relationships of the model of research hypotheses were checked by using LISREL for Windows Program.

The results of the research were as follows:

1. *The administrative factor of the administrators, the work performance factor of the teachers, and the learning factor of the students affected success in management of educational institutions at a rather high level except for the administrative resource factor affected success in management of educational institutions at a rather medium level.*
2. *In the educational institutions as a whole and in each type of Educational institutions, there was success in management as a whole and in each standard also at a rather high level except for college of agriculture and technology which Standard in innovations and research of teachers and students had success at a medium level.*

Doctor of Philosophy's thesis, major educational Administration. Advisors : Assoe. Prof. Dr. Yachai Phongboribun, Northeastern University; Dr. Aganit Khlangsaeng, the Deputy General Secretary, Vocational Education Commission; and Dr. Nuchwana Luanganggoon, Mahasarakham University.

3. *It was found that the model of all straight linear structure relationships had harmony with empirical data; both direct and indirect influences on success in management of the educational institutions were found to be statistically significant as follows:*
   - *3.1 The factor in administrative resources had positively direct influences on technical college, vocational college, college of agriculture and technology, industrial and community education college, and polytechnic college ; and had positively indirect influences on the educational institutions as a whole through the aspect of administration of the administrators.*
   - *3.2 The factor in biosocial characteristics of the administrators had positively indirect influences on the educational institutions as a whole through the aspects of administration of the administrators ; and on college of agriculture and technology through the aspect of administration of the administrators, work performance of the teachers, and learning of the students.*
   - *3.3 The factor in biosocial characteristics of the teachers had positively indirect influences on the educational institutions as a whole through the aspects of work performance of the teachers, and learning of the students.*
   - *3.4 The factor in administration of the administrators had positively direct influences on the educational institutions as a whole and had negatively direct influences on polytechnic college.*
   - *3.5 The factor in work performance of the teachers had negatively direct influences on the educational institutions as a whole, and had positively indirect influences on the educational institutions as a whole through the learning of the students.*
   - *3.6 The factor in learning of the students had positively direct influences on the educational institutions as a whole, technical college, and vocational college.*

Background

Changes in the economy, and therefore changes in society, often lead to new types of production and services. In turn, these new productions and services lead to the need for modern management systems and higher levels of knowledge by workers, particularly middle professional-level and vocational-level workers. To this end, the Office of the Vocational Education Commission adjusts its plan with a view to producing capable workers-those with not only good mental and physical skills but also with good morals- in keeping with the needs of workers in present economic times in Thailand. [1]

Problems affect vocational education management, such as the image of vocational students, as well as rivalry and fighting. The general attitude by society toward vocational education is that vocational schools are “the second choice” for students who cannot successfully enter institutions of higher learning. The Thai educational system values highly the earning of a degree, and the Office of the Vocational Education Commission educates to a level equivalent to the bachelor degree. [2]

The result of the research indicates that Thai vocational education has numerous problems in achieving its goals of producing successful, well-skilled workers and managers. Such

problems include lack of clarity in directions and goals, unclear standards within vocational subjects, limitations in government legislation affecting vocational education, insufficient annual budgets, overburdening of vocational teachers, extreme teacher-student ratios, student knowledge levels and skills lower than standard, and out-of-date and insufficient quantities of equipment. [3, 4, 5, 6]

Therefore, the researcher is interested in the factors that affect the success in management of educational institutions under the Office of Vocational Education Commission and in identifying the types of education institutions that would be useful in the management of the Office of Vocational Education Commission.

Research Objectives

The objectives of this research were:
1. To examine levels of factors affecting success in management of educational institutions.
2.To examine levels of success in management of educational institutions as a whole and as classified according to the type of educational institutions.
3.To develop a model of straight linear structure relationships of the factors affecting success in management of educational institutions.

Research Process

The research was conducted in 2 phases.

Phase 1: determined the research conceptual framework and constructed a model of research hypotheses.

Phase 2: developed the model of straight linear structure relationships of the factors affecting success in management of educational institutions.

Sample: The sample consisted of two groups;
1. The 17 qualified persons purposively selected for collecting empirical data by interview.
2. The administrators and teachers obtained by stratified Random sampling, 35 subjects from each educational institution type with a total of 175 subjects, selected by the purposive sampling technique according to the qualifications and the determined proportion that is administrators, head of the office, general education teachers, and vocational teachers 1:1:2:3 respectively. There are 7 subjects in each education institutions with a total of 1,225 subjects from which to collect data by using the questionnaire for harmony analysis between research hypotheses and empirical data.

Variables
1. Causal Variables
    1.1 Exogenous Variable consisted of;
        1.1.1 The factor in administrative resources consists of 7 Variables: personal budget, machine and material, information technology, curriculum, environment and community support.
        1.1.2 The factor in biosocial characteristics of the administrations consists of two variables: administrators' educational qualifications and administrators' experience.
        1.1.3 The factor in biosocial characteristics of the teachers consist of three variables: teachers' education qualification, teaching experience and tasks of instruction.

1.2 Endogenous Variable consisted of:

1.2.1 The administrative factor of the administrators consisted of three variables: leadership and management Style of administrators and school atmosphere.

1.2.2 The work performance factor of the teachers consisted of three variables: teachers' quality of instruction, job satisfaction and social support.

1.2.3 The learning factor of the students consisted of three variables: students' learning behavior, learning attitude, behavior in social aspects, including with learners' friends.

2. End-result variable

That is the success in education institution management had three variables; standard of learners and vocational graduates (quality of learners and vocational graduates), standard in vocational service to the community of the students, innovations and research of teachers and students.

Instrument

1. The structured- interview form used to interview the qualified persons.

2. The 6-part questionnaire of the success in management of educational institutions according to opinions of the educational institution administrators and teachers in the field of the vocational Education Communication.

Part1. The questionnaire of foundation of education institutions and biosocial characteristics of the response consisted of a check list and short answer, questions, 6 items for administrators and

10 items for teachers.

Part 2. The questionnaire for opinions about availability of administration resources and for opinions about how such resources were successfully utilized or managed. This survey included 44 items of

5-rating-scale questions with discriminating powers ranging from .40 to .80.

Part 3. The questionnaire for opinions about behaviors of administrators of education institutions, as well as opinions about the working atmosphere in the education institutions, and their effects on the success of administration. This survey included 7 items of 5-rating-scale questions with discriminating powers ranging from .38 to .88.

Part 4. The questionnaire for opinions about work performance of the institution's teachers, as well as opinions about social support of teachers by administration and teacher's friends. This survey included 35 items of 5-rating-scale questions with discriminating powers ranging from .61 to .84.

Part 5. The questionnaire for opinions about learners' attitudes and behaviors and their effects on the success of management. This survey included 28 items of 5-rating-scale questions with discriminating powers ranging from .59 to .84.

Part 6.The questionnaire for opinions about the success of education institution management as compared with the rule of vocational education standards. This survey included 14 items of 5-rating-scale questions with discriminating powers ranging from .63 to .81.

Data collection

The process of data collection was conducted by interviewing the qualified person, then empirical data were collected by letter, e-mail and in person. The educational institutions were selected by using sampling.

Data analysis

The process of qualitative data collection is conducted by the descriptive analysis, Base statistic, Pearson product moment correlation coefficient between observe variables and latent variables with statistic computer program checking the harmony of the relationship of causal variables and the empirical data and develops the model of straight linear structure relationships of the factors affecting success in management of the educational institution by using LISREL program (Version 8.30).

Conclusion

The results of the research were as follows:

1. For the level of factors affecting success in management of educational institutions according to opinions of the administrators and teachers were as follows:
   1.1 The factor in administrative resources affected success in management of the educational institutions as a whole and in each type of educational institutions at a rather medium level only at vocational colleges, this factor affected at a high level ($\overline{X}$ = 3.34-3.54). The same maximum mean of observed variables are personnel.
   1.2 The factor in administration of the administrators affected success in management of the educational institutions as a whole and in each type of educational institutions at a rather high level only at technical colleges, this factor affected at a medium level ($\overline{X}$ = 3.48-3.80). The same maximum mean of observed variables are abilities in management of administrators.
   1.3 The factor in work performance of the teachers affected success in management of the educational institutions as a whole and in each type of educational institutions at a rather high level ($\overline{X}$ = 3.63-3.80). The same maximum mean of observed variables are quality of teachers' instruction.
   1.4 The factor in learning of the students affected success in management of the educational institutions as a whole and in each type of educational institutions at a rather high level ($\overline{X}$ = 3.55-3.78). The same maximum mean of observed variables are attitude of learning except for college of agriculture and technology, maximum mean of observed variables are friend behavior social.

2. For success in management of educational institutions according to opinions of the educational institution administrators and teachers as a whole in each type of educational institutions, there was success in management as a whole and in each standard also at a rather high level ($\overline{X}$ = 3.61-4.48). They were in this coincident order from the highest to lowest mean : Standards in vocational service to the community of the students, quality of learners and graduates, and innovations and research of teachers and students except for college of agriculture and technology which Standard in innovations and research of teachers and students had success at a medium level ($\overline{X}$ = 3.45).

3. For outcomes of developing the model of straight linear structure relationships of the factors affecting success in management of the educational institutions, it was found that the model of all straight linear structure relationships had harmony with empirical data ;

both direct and indirect influences on success in management of the educational institutions were found to be statistically significant as follows:

3.1 The factor in administrative resources had positively direct influences on technical college, vocational college, college of agriculture and technology, industrial and community education college, and polytechnic college with direct influences of 0.60, 0.45, 0.81, and 0.93 respectively ; and had positively indirect influences on the educational institutions as a whole through the aspect of administration of the administrators with the direct influence of 1.62.

3.2 The factor in biosocial characteristics of the administrators had positively indirect influences on the educational institutions as a whole through the aspects of administration of the administrators, work performance of the teachers, and learning of the students; and on college of agriculture and technology through the aspect of administration of the administrators with indirect influences of 0.80 and 0.22 respectively.

3.3 The factor in biosocial characteristics of the teachers had positively indirect influences on the educational institutions as a whole through the aspects of work performance of the teachers, and learning of the students with indirect influence of -0.46.

3.4 The factor in administration of the administrators had positively direct influences on the educational institutions as a whole and had negatively direct influences on polytechnic college with direct influences of 2.18 and -0.55 respectively.

3.5 The factor in work performance of the teachers had negatively direct influences on the educational institutions as a whole with direct influence of -0.87, and had positively indirect influences on the educational institutions as a whole through the learning of the students.

3.6 The factor in learning of the students had positively direct influences on the educational institutions as a whole and technical college and vocational college with direct influences of 0.23, 1.01, and 0.40 respectively.

From the result of research has found that the beneficial acknowledgement of the educational institution management is the factors in administrative resource has a positively influence on the College of Agriculture and Technology, the Industrial and Community Educational College, and the Polytechnic College. The factors in work performance has a positively direct influence on the administrative management of the College of Agriculture and Technology and has a negatively direct influence on student learning of the Technical College and the success in the whole educational institution management, the College of Agriculture and Technology and the Polytechnic College. The factor in student learning has a positively direct influence on the work performance of the teachers in the Agriculture and technology and the Polytechnic College.

Recommendations

1. Practical Recommendations

At educational institution level:

1. In administrative decision, consideration should be made taking into account of factors relationship lines and influence affecting success in the administration of educational institutions.

2. The success level in administering educational institutions should be used as base-line to determine the success goal in annual management of educational institutions.
3. Confidence and motivation should be created for target groups so that they would want to follow vocational line.
4. Learning Activities should be organized with the consideration of all aspects of students behaviors.

At the Office of Vocational Education Commission level:
The findings of this Research may be used in connection with The promotion and Support Educational Management appropriate to the Various kinds of educational institutions under her jurisdiction.

2. Recommendations for Further research

2.1 A straight linear structure relationships of vocational capability variables with vocational effectiveness so as to get information to construct measurement tools for vocational capability of graduates of each subject areas as well as for their accreditation, thus increasing their human capital value.

2.2 Continuing research should be conducted, using the body of knowledge from this research to formulate vocational education standards of the Office for vocational Education Commission or other related offices, including seeking guidelines for more quality in the Administration of various types of vocational education.

2.3 Similar researches should be conducted involving other variables or other techniques of data interpretation such as multi-level Analysis.

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Sustaining School Improvement Through A Participatory Action Research In Tackling School Organizational Problems In Real Time

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Abstract

Organizations such as schools are confronted with a fast-paced and turbulent environment. More often than not their piecemeal efforts and quick fix solutions to their rapidly changing environment only provide at best transient answers. Action research strategies discover a way of tackling their real problems and provide tailor made solutions in real time. Schools are community organizations. As such they are affected by external challenges abound in the domain of technology, social demands and communal expectations while internal challenges have prompted various of initiatives to bring about people changes and organizational capacity building. What schools have found is a way of tackling their own problems and issues for themselves. Action research and action inquiry strategies enable the school to address the unpredictable nature of the organization. It enables the various stakeholders to develop new knowledge that is sensitive to the waves of changes that are now happening in schools. The focus is on real problems and finding answers and solutions to address them. Action research is responsive in nature resulting in interactive relationships with the community on the one hand and the teachers on the other hand coupled with both action and reflection on action, the principal of the school is able to bring about transformational changes to the school. The action-reflection cycle provides the knowledge and expertise of management that evolve into a corpus of wisdom, which can be used to address the challenges faced by the principal. By incorporating several cycles of action research, involving both external stakeholders such as parents and internal stakeholders, which constitutes the teachers, the school is moved from one lower level to the next higher level. This resulted in a participatory action research and each stakeholder learns from situations in their work place, which is the school. This enables the incorporation of 'soft skills' from the internal stakeholders and the 'hard skills' from the external stakeholders to bring about changes to the school. Collaborative techniques such as this enable the school to reach a common understanding; action inquiry by external stakeholders and action research to study change by internal stakeholders, provides the opportunity for the school principal to introduce changes in the school effectively.

1.0 REFLECTION OF THE PROBLEM STUDIED

It is necessary to understand that any improvement in the quality of education is the task of the school communities as a whole. School communities include both external and internal stakeholders. In other words, there must be participation from everyone who is involved in the school in one way or another. It does not lie solely on the work of individual teachers.

While the Ministry of Education in collaboration with the State Education Department and the District Education Office provide various opportunities for teachers to engage in action research as means to improve pedagogical practices, it is the practice of education at the school level which proves to be the important key to quality education and sustainable school improvement. No doubt action research offers a set of principles, which when undertaken, will enable teachers to discover ways of tackling their real problems and provide tailor-made solutions which can lead to improvement of the pedagogical practices of the teachers. However, schools are community organizations and they serve a geographically defined area and also affected by both external as well as internal challenges. External challenges abound in the domain of technology, social demands and communal expectations while internal challenges have prompted various initiatives both at higher levels and the school to bring about people changes and organizational capacity building. As each school is affected by its own unique sets of external and internal challenges, it is pertinent that each school has to find ways of tackling their problems and issues themselves. Each school has to involve their own external and internal stakeholders to address the external and internal challenges. External stakeholders will include parents, community which the school serves and various government departments while the internal stakeholders are the people working in the school such as teachers, gardeners, janitors and the students themselves.

To face the internal challenges posed by the uniqueness of each setting, each school has to find its own model. To obtain this, there must be professional learning (undertaken at all levels) to reconstruct existing practices. Such model must be able to address the beliefs and assumptions that guide teachers' instructional decisions and only then it will lead to significant and enduring changes in classroom practice. Thus, participating in action research teachers will be able to find ways to improve their pedagogical practices that are highly effective in addressing the internal challenges of the school. But schools are social and educational institutions. In other words, it is not sufficient to put teachers as the sole variable in educational and school improvement. As such, it is important to understand that the school as an organization can structure, enable or pose constraints on educational work. In other words, the school must also be understood as being "greater than the aggregated responsibilities of the individual teachers who are part of the unit" (Grundy, 1994). When each one is taken as an individual, there is no autonomy (Kemmis, et al; 1983). So far, any form of teacher participation in educational decision making has not been an exercise of autonomy but as 'decentralization' and this is in fact an increase in responsibility and not autonomy. As a result, as mentioned by Stenhouse (1976), the basis for quality education does not lie in the individual teacher and they should not be seen only as an association of teachers, but instead must be seen as a professional community. Autonomy, which is the power to make the necessary decisions that lead to educational improvement, should lie in that professional community. By professional community, it includes both the external and the internal stakeholders. This study would enable me, as the principal of the school, to involve both the external and the internal stakeholders so that each party would be involved in the action research undertaken by the principal. Together we will bring sustainable school improvement.

2.0 FOCUS OF THE STUDY

Principals who are in the leadership role should provide for the betterment of the school in general and the pupils in particular (Dimmock & Walker, 2005). The phrase 'for the

betterment' can be translated as physically, emotionally, spiritually and intellectually (Rosnani, 2004; Sufean, 2004). With such new expectations and new concepts from teacher professional learning, schools will have to be less bureaucratic, less autocratic-authority and less hierarchical. There is an obligation for schools to communicate with and the involvement of parents in school decision-making and governance (Leithwood, et al. 1996). The involvement of parents and teachers are important if there is to be an overall school improvement. As the principal is engaged in an action research to bring forth school improvement, this action research has to involve the parents and the teachers. Each party has to take part in the action research and on top of that they, especially the teachers themselves have to initiate their own action research so as to find their own answers to address their problems, which when solved would contribute to the improvement of the school as a whole. This was clearly described by Goodlad (1984) in the statement below:

> "Significant educational improvement of schooling, not mere tinkering, requires that we focus on entire schools, not just teachers or principals or curricula or organization of school-community relations but all of these and more".

Such was the situation. Thus, it was obvious that educational improvement in the school should not be restricted to teachers' pedagogical practices only. To ensure educational and improvement, there must be changes in every one of the department and should touch every member of the school ranging from the gardener to the teachers, from the clerk to the parents and community. Focus was not only on the teachers but on the whole school. While teachers' work was important in curriculum changes, 'the school' had to play a pro-active role in the change. The term 'the school' was portrayed as the vehicle for educational provision, the site in which curriculum reform was implemented. 'The school' was considered as a total entity and not as aggregates of educational professionals with issues on educational improvement.

Thus, a school must become "self-directing and self-renewing" (Baker & Proudford, 1989, p. 40). As educational settings are unique and common elements of schooling take on different characteristics in different contexts, such uniqueness of each school setting must be taken into consideration. By using action research, the principal and the teachers are able to find suitable ways to address the challenges posed by the school. As I, the principal, was engaged in the action research to bring about a general school improvement, the teachers had to play their part too. By participating in the action research initiated by me, each one of them will solve the problems that they faced and this would bring the school performance to a level higher than before.

School improvement should not only be restricted to academic achievement brought forth by the teachers. School infrastructure, student discipline and community support should also be emphasized. This is to ensure a sustainable improvement. With support provided by the community and parents, the whole school can be brought to a higher level and improvement can be sustained longer. Thus, besides the teachers taking part in their own action researches,(which formed part of the principal's action research), the external stakeholders were also involved, each playing their own role and solving the problems in their own capacity. Together, we were able to bring the school to a higher level.

Thus, what are the focus and prime factors that could bring about educational improvement to this school? How and what were the relationships between the external and the internal

stakeholders in their quest towards their common goal in school improvement? Such questions led to the need to look into the culture of the school. By culture it meant how things were done in the school. What were the stakeholders' beliefs and values? To bring about changes, I had to look into the current ways things were done in the school. How teachers carried out their work, how students learn and what were the expectations of the parents and community? To do this, a set of themes or principles were identified so as to ascertain the focus and prime factor in bringing about educational improvement to this school. It also identified a set of principles with which action research could be carried out. The principles set forth in this research were adapted from Grundy's themes of school improvement (1994).

The themes set forth in this research were as follows:

i. The culture of the school was manifested in both the overt and the hidden curriculum. The culture of the school was the key factor influencing student outcomes.

ii. Altering the culture of the school was the most important and most necessary aspect in the process of improvement of the school.

iii. The school needed to develop a climate receptive to change, an ability to identify their own problems and a capacity to develop and implement improvement plans.

iv. School improvement programs must focus on the whole school and not on individual work.

v. The dynamics of school improvement involved a process of change at the individual level and the organizational level. At the organizational level, structures which supported interactive social relationships such as participatory decision making and collaborative planning could create a sense of commitment and ownership, and promote feelings of collegiality. At the individual level the process of change would bring satisfaction of accomplishment and ownership of achievement.

vi. Leading and managing change was a developmental and reflexive process involving knowledge of alternative models of schooling, technical skills and expertise, intuition and experience.

To conduct the study based on the above mentioned themes and principles, I used action research. It enabled me to identify the areas of concern. Teachers participated by addressing the problems through conducting their own action researches. Their involvement in their own action research projects to solve the problems at their level was actually part of the research cycle of the principal. Such participatory action research enabled the teachers to move in the same vision and objective of the whole school set by the principal. My action research incorporated the action researches of the teachers and in my own cycle I was able to involve the parents and community too. There was continuous support from each other as we played out our own roles.

3.0 SCHOOL IMPROVEMENT AND PARTICIPATORY ACTION RESEARCH

Action research was the most appropriate form of enquiry in this research with its emphasis on participatory, collaborative and self-reflective nature and it firmly located it as a form of social action oriented towards improvement of the school as a whole as explicitly defined by Kemmis & McTaggart (1988, p. 5)

> Action research is a form of collective self-reflective enquiry undertaken by participants in social situations in order to improve the rationality and justice of their own social or educational practices, as well as their understanding of these practices and the situations in which these practices are carried out.

The emphasis on the process in action research rather than the end-product enabled the focus to be placed on practices and upon the improvement of the situation in which the practices took place. This in turn pointed to the appropriateness of participatory action research as a school improvement strategy. In the principles enunciated above, it was important that schools "identify their own problems" (3) and "having knowledge of alternative models" (6) suggest that changes in knowledge and understanding were as important to school improvement as were changes in practices. Furthermore, "altering the culture of the school was the most important and most necessary aspect in the process of improvement of the school" highlighted the link between educational improvement and improvement in "the situations in which educational practices were carried out". However, this did not ignore the important role of the individual teachers in bringing educational change. As McTaggart, (1989) said, participatory action research was concerned simultaneously with changing individuals, on the one hand, and, on the other, the culture of the groups, institutions and societies to which they belong. In other words, this approach recognized the importance of institutional as well as individual improvement.

Teachers when taking part in doing research were aware that their inevitable intervention in the school situation would lead to changes. As the principal embarked on her action research, she identified several problems which the teachers had to address. By participating and addressing the problems identified by the principal, the teachers were aware that they were in an unsatisfactory situation and those affected would wish to alter for the better. However, teachers were not able to conceptualize with certainty the answer to their problems. They had to look into the possibilities rather than be predictive. As a result, teachers had to work with maximum creativity and imagination. By taking part in the action research cycle of the principal, a framework was provided which gave them the freedom to work out their solutions to their problems. By doing their own action research, the teachers stood a better chance of 'getting it right' and ideas 'taking off'. Their various action research projects undertaken to address the problems identified by the principal showed that they were aware who they were doing it for, and had the imagination to collectively envision a desirable new state and attract others who shared that vision. There were countless tiny cycles of participatory reflection on action, learning about action and then new informed action which in turn became the subject of further reflection. With this, there was constantly new informed action which in turn became subject of further reflection and this led to new related actions being taken on the spot. This way change did not happen at 'the end' but it happened throughout.

In participatory action research, the participation element was of utmost importance. As stated below (McTaggart, 1991);

> ..action research is the way groups of people can organize the conditions under which they can learn from their own experience and make this experience accessible to others"

This research involved the collaboration of various people in the school and was sustained by a shared purpose, and this shared purpose stemmed from the understanding that everyone shared and considered of value. Thus, participatory action research was suitable as it facilitated the difficult situations for social change.

Essentially participatory action research was research which involved all relevant parties in actively examining together current action in order to change and improve it. Thus, this research involved all relevant parties in actively examining together current actions, which they experienced as problematic in order to change and improve it.

4.0 THE SETTING

4.1 The Research Site

The study was undertaken in the natural setting. The school is a grade A school with a student population of 1800 in August 2009. They were made up of 40 % Malays, 38% Chinese and 22% Indians. There were nine classes for each form for Form 1, Form 2, Form 3, eight classes for each Form 4 and Form 5. There were 14 classes of Upper Six and Lower Six. Students came from a wide range of socio-economic background. Some were rich while some were very poor. Academically, those students showed great differences. The academically inclined were inevitably in the first two classes while the non-academically inclined would be in the last three classes. These wide differences among the students made teaching and learning difficult as each class had different needs. The bright students were so good that they could be arrogant and proud while some of the weak students could barely read and write.

There were 126 teachers although the school was eligible to have 132 teachers. Out of the 126 teachers, five were working on a temporary basis and without training. These were sent by the district education office to the school to take over from those teachers on maternity leave or who went on unpaid leave. The demographic characteristics of the teachers were as diverse as that of the students. There were only 29 male teachers as compared to 97 female teachers. 80% of the teachers were graduate teachers with about 5% holding masters degrees. 80% of the teachers were in the 30-45 age group with 5% in their 50s.

The school being a semi-aided government school was opened by the missionary on 18th March 1912 in the downstairs of the then Orphanage. Through the years, many blocks of building were added and various facilities were also built to cater for the needs of the changing syllabus. The older blocks were however, not maintained due to lack of funds. As a result many of the old blocks of building were in a dilapidated state. The roof leaked and the beams and walls were badly infected by termite. Glass panes were absent from the steel hinges and the classrooms were without soft boards. Many classrooms did not have

suitable whiteboard as many of them were warped with age. Walls of the classrooms and the blocks of buildings were badly in need of new coat of paint. Water supply to the toilets was constantly disrupted. The staff room was crowded and dusty. Books and boxes were lying on the floor. The computers and printers were dusty. Out of the five computers two were not functioning and they were occupying space in the already crowded staff room. There was a water cooler and an oven toaster that were broken down but not thrown away. There was no garage for the teachers' cars and there were no trees in the school compound. The surrounding was hot and dusty.

The teachers had a lackadaisical attitude about the situation and they were so used to doing things their own way. There was no monitoring of expenses as the teachers were given the freedom to purchase anything they wanted and then claim from the chief clerk. The teachers were almost always in the canteen instead of entering classes. The culture of the school was not work-oriented and the importance was placed on self. Teachers did not have the time or the inclination to be close to their students. Classes were dirty with rubbish strewn all over the floor. Teachers could teach or be in the class and not bothered by the rubbish or the haphazardly arranged tables and chairs. Fans and lights were left on when there were no students in the class. Everyone was not interested in the condition of the school and did whatever little they like to justify their presence there. There was no real pedagogy done as teachers were more interested in making the students copy essays and exercises from worksheets and exercises into their books. It was common to see teachers sitting at their desks writing and the whole class copying from books. There was nothing written on the whiteboard. Worse were those teachers who did not attempt to control their students. Students were seen running about in the class and the teachers not doing anything to control them.

4.2 The Role of the Researcher

I was the principal of this school. My heart was heavy with despair at first sight of the school. It was obvious that as the principal of a government-aided school, I had not only to take care of academic results but also the physical condition of the school. There was high expectation from the community towards this school. The academic achievement in the past was extremely good but had shown deterioration since 2005 for all the major exams. I honestly did not know where to start or how to start. I knew there were many things that I had to put straight and yet I did know how to start. The teachers were so ingrained in their way of working and any changes would lead to much discontentment. A handful of teachers voiced their unhappiness if I were to make any changes and they felt that the results of the school were still good and that the students went for tuition classes and therefore their academic affairs were taken care of. Some even commented that why they should put in extra effort as they were teaching other people's children. Such negative and disillusioned comments showed that this school was facing serious problems as the teachers were showing signs of lack of motivation and directionless as far as their career was concerned. I knew I had to so something but what and how. It was then that I decided to do action research and make the teachers involved in it.

5.0 THE DESIGN OF THE STUDY

Action research was not a linear improvement process. It did not proceed from idea to action. Instead it was cyclical and incorporated four interrelated 'moments' which were

reciprocally related to one another. The moments of **reflection** and **action** enabled the development of understanding and carrying out of actions. These two moments were related to **planning** and **observation**, which were the other two organizational moments (Grundy, 1987).

Elliot (1991) mentioned that the action research process could be entered at any moment. For instance, when change happened in the school in a relatively unplanned manner, such change needed to be evaluated so as to be justified through reflection on the basis of evidence (observation). Planning was needed when change was to be sustained or modified. As a result, action research was undertaken as a change process. As this research had to be undertaken in the school's natural setting and not in a controlled environment, action research fulfilled the need.

As the principal of the school, I also wanted to understand how to encourage teachers to learn from the situations in the school and how best the community and external stakeholders could help in the school improvement program. Last but not least, I needed and wanted the flexibility in conducting the research as the school, as an organization was prone to frequent changes which in turn affect the school culture. Such changes called for a major shift in the way things were done. The steps we had to take to move towards this new direction were not very clear. We had to use our collective knowledge, knowledge that we created as we went along, in a collaborative way to move forward in our school improvement commitment as advocated in *"My Living Theory"* (Whitehead, 1989, 1993, 1999). As the principal of the school, I realized that I had to share my power and responsibility to achieve our objectives. In other words, all of us had to be involved in 'learning-by-doing'.

This study addressed both external and internal challenges and as such in this study, the action research undertaken was based on two cycles. The initial action research cycle was used to address the internal challenges and basically involved the teachers and other internal stakeholders. The second action research cycle was used to address external challenges where external stakeholders were involved in the process of school improvement. Together these formed the action research approach to my research.

6.0 CYCLE ONE: ESTABLISHING THE CONTEXT OF THE STUDY

6.1 Framing the Problem

This stage of the research incorporated a number of the key features of action research. The aim was educational improvement. It was grounded in the participative processes of action and reflection. At this stage the improvement was aimed towards the individual pedagogical practices of teachers which in turn would address the organizational practices of the school. This research also fulfilled the desire expressed by Stenhouse as discussed above for professional autonomy to be located within the community of the school. The teachers were allowed to experiment with innovative and creative ways to bring about better pedagogical practices and if the need arose, to stop using traditional practices and procedures. In this way the autonomy of the school was recognized and was encouraged as a means of facilitating educational change. As a result, teachers themselves were encouraged to carry out their own action research so as to find innovative ways to solve their own unique problems in the classrooms. It was important that at this stage of the

research this autonomy was divested to the school, not to individual teachers and to use participative decision-making to investigate alternative forms of work organization. To enable such commitment, opportunities to provide a flatter management structures and cooperative workplace practices were enforced by the principal.

I started the wheel of action research in motion by doing a headcount analysis for every subject as shown in Table 1. By providing an analysis of the headcount for each subject, each teacher was provided with their respective targets which they had to achieve for each exam/test. To provide opportunities for the teachers to do their own action research, they were told to do an analysis of the mid-year exam results for their respective subjects. By comparing their mid-year achievements with the headcount given to them, as shown in Table 2, the teachers would be able to know how far behind their students' achievement was from the targeted result. Based on the comparison of the mid-year exam results and the headcount analysis given to them they were to identify the weaknesses and problems they encountered that caused the students not able to meet their respective target results. They were also told to present their strategies and programs that they would implement in order to improve on their subjects. This way action research was set in motion for each teacher. Teachers' action research projects were the action moment of the principal's research cycle.

Table 1
Headcount for the National Language (Bahasa Melayu)

		N	A		B		C		D		Lulus		E		Average Grade
			No	%	No	%	No	%	No	%	No	%	No	%	
a.	PMR Exam (Best Year 2008)	292	127	43.50	94	32.20	43	14.70	19	6.50	283	96.90	9	3.10	1.93
b.	Final Year Exam Form.2/2008	320	10	4.13	67	21.20	74	23.10	73	22.80	224	70.00	96	30.00	3.56
c.	TOV Final Year Exam Form 2/2008	316	10	3.16	35	11.08	48	15.19	130	41.14	223	70.57	93	29.43	3.83
d.	OTR 1	316	34	10.76	30	9.49	50	15.82	125	39.56	239	75.63	77	24.37	3.57
e.	OTR 2	316	57	18.04	26	7.91	51	16.14	121	38.29	254	80.38	62	19.62	3.34
f.	OTR 3 (mid-yr)	316	80	25.32	20	6.33	52	16.46	117	37.03	269	85.13	47	14.87	3.10
g.	ETR (calculated)	316	138	43.67	102	32.28	47	14.87	20	6.33	307	97.15	9	2.85	1.92
h.	ETR (forecast)	316	149	47.15	3	0.95	56	17.72	107	33.86	315	99.68	1	0.32	2.39
i.	Difference		-139		32		-8		23		-92		92		1.44

Key:

PMR - Lower Secondary Examination (a public national exam taken by the Students when they are in their third year in the secondary school.

TOV - Take off Value (results from the final year exam from the year before)

OTR - Operational Targeted Result (increment expected after a period of teaching and learning)

ETR - Expected Target Result (target set and hoped to achieve after a full year's teaching and learning)

Table 2
A Comparison between the Mid-Year Result and the Headcount

		N	A		B		C		D		Lulus		E		Average Grade
			No.	%	No	%	No	%	No	%	No	%	No	%	
a.	PMR Exam (Best Year 2004)	292	127	43.50	94	32.20	43	14.7	19	6.5	283	96.90	9	3.10	1.93
b.	Final Year Form 2/2008	320	10	4.13	67	21.20	74	23.10	73	22.80	224	70.00	96	30.00	3.56
c.	TOV Final Year Form 2/2008	316	10	3.16	35	11.08	48	15.19	130	41.14	223	70.57	93	29.43	3.83
d.	OTR 1	316	34	10.76	30	9.49	50	15.82	125	39.56	239	75.63	77	24.37	3.57
e.	MONTHLY TEST 1	314	7	2.23	52	16.56	75	23.89	130	41.40	264	84.08	50	15.92	3.52
f.	OTR 2	316	57	18.04	25	7.91	51	16.14	121	38.29	254	80.38	62	19.62	3.34
g.	MONTHLY TEST 2	309	14	4.53	45	14.56	70	22.65	116	37.54	245	79.29	64	20.71	3.55
h.	OTR 3 (Mid Year Exam)	316	80	25.32	20	6.33	52	16.46	117	37.03	269	85.13	47	14.87	3.10
i	Mid-Year Exam	315	7	2.22	78	24.76	64	20.32	98	31.11	247	78.41	68	21.59	3.45
I.	ETR (Calculated)	316	138	43.67	102	32.28	47	14.87	20	6.33	307	97.15	9	2.85	1.92
j.	ETR (Forcast)	316	149	47.15	3	0.95	56	17.72	107	33.86	315	99.68	1	0.32	2.39
k.	Difference		-139		32		-8		23		-92		92		1.44

Table 2 shows the actual achievement during the mid-year exam and the targeted result for the National Language (Bahasa Melayu). Table 2 shows that, for the mid-year exam, there should be 80 students who should obtain an A but the actual result showed only 7 students managed to get the A. That means the teachers teaching the subject for this form had to find ways to improve their pedagogical practices so that they could help another 73 students to get the A grade for the subject and why they fell short. Besides, the forecast number of students to get the A for the subject is 149 students and that means by the time the students sit for their PMR exam in October, the teachers would have to identify and help 142 students to get distinction or A for the subject. These teachers were told to present the mid-year exam analysis of the marks and point out the students' weaknesses and strong points. They were also told to formulate strategies and plans on how to best help the students to make the grade. Their needs were made known and the school authorities, which included the principal, the senior assistant for academic affairs and the respective heads of department and subject heads, had to assist in anyway that was possible so that the target could be achieved. The same went for all the other subjects.

6.2 Acting and Observing

Having identified the problems and concerns of the teachers, I put forward the plans to the various heads of department. The heads of department with the subject heads had to make sure that extra lessons were carried out with intensive revision given the priority. Special schedule was drafted up to accommodate the extra and intensive revisions. More exercises were printed and distributed to the students so that they were given the extra work and also to increase level of exam anxiety of the students. This way everybody participated. Teachers and students were told of the strategies and they were implemented immediately after the trial exam. The students had another one month before the real exam and this way they were given direction and help in their final preparation. This way, the problems were identified and the solutions formulated by the teachers themselves. Any negative consequences that arose from the implementation of the new policies were recorded for further fine- tuning or dropped if necessary.

The first problem to be tackled was obviously the teachers' presence in the classroom with the students. According to the literature of Effective School (Mortimore, 1987), one of the tenets of effective school was the protection of instructional time. Teachers who were not in class were called to enter class. Teachers who could not control class were given help by the discipline teachers and the principal herself. Such teachers were also given short courses on class management and class control.

Table 3 below shows the various problems being tackled and solved. Each one of the problem was solved by first identifying the various maladies affecting the various departments by the teachers concerned. They were encouraged to reflect and to discuss the problems they faced and the strategies they wanted to formulate to solve the problems.

Table 3
The Identification and Reflection on Problems and the Actions Taken by Each Department

Item	Department	Problems Identified	Solutions
1.	Discipline	Student had no identification. As a result teachers and school prefects unable to trace students with discipline problems.	Name tags were made compulsory. They were sewn onto the students' shirts and pinafores.
		Students late for school. Repeated offenders knew loopholes in the system and able to get free undetected.	Guard at the gate told to be vigilant and a book for students to write their names when they were late were implemented. Even students who came in the afternoon for co-curricular activities had to write their names.
		Walking about outside class when lessons were being conducted.	Students found loitering in the school compound and outside the classroom were called to the principal's office where they were

Item	Department	Problems Identified	Solutions
			punished and their behavior recorded into the discipline cards. This would affect their conduct grade in their leaving certificate.
		Students were not appropriately dressed for their physical education class and many of them refused to take part in the physical activities.	Students were told to stand in the field or run around the field as punishment. Their misbehavior was recorded into the discipline card too for reference when their leaving certificates were being prepared at the end of the year.
2.	Teachers	Teachers not entering class.	Teachers were directed to enter class on time. If they were not in class, the monitor of the class was told to call the teacher immediately while the principal waited. Principal walked to the canteen to check on teachers who were supposed to enter class.
		Teachers not writing their record books	Letters of reminder were sent to the teachers concerned.
3.	Counseling	No co-operation between the 4 counselors. Each one waiting for the other to carry out the various programs required due to job ambiguity.	The 4 counselors were given respective forms to take care of. This way they became more focused and knew their tasks clearly.
4.	Co-curricular activity	De-motivated band members and no qualified music teacher who could teach. Teacher advisors were not musically inclined and only able to see to housekeeping needs only.	A coach was employed with the funds from the PTA. A tremendous surge in spirit and morale among the band members. Great improvement and were able to enter into state level competition.

Item	Department	Problems Identified	Solutions
5.	Finance and Account	No control of purchase of things by teachers. No quotations when purchase was made. Teachers were allowed to buy whatever they needed on their own and claimed from the chief clerk. There was no attempt of control and as a result there were many of the same things being bought by the various departments. There was much wastage.	Teachers had to fill up request forms when making purchase. Purchase was subjected by approval by the principal. Only the principal and the senior assistant for academic affairs could sign cheques and approve purchase.
		Teachers sent their materials to be photostatted to the shop themselves without having to go through the principal or heads of department in the school. This had caused abuse and bills chalked up to thousands of ringgit in a month.	All materials for photostat needed to be approved by the principal. Another shop was selected as it charged cheaper rates than the former one.

The model in Figure 1 shows the conceptual framework of the research.

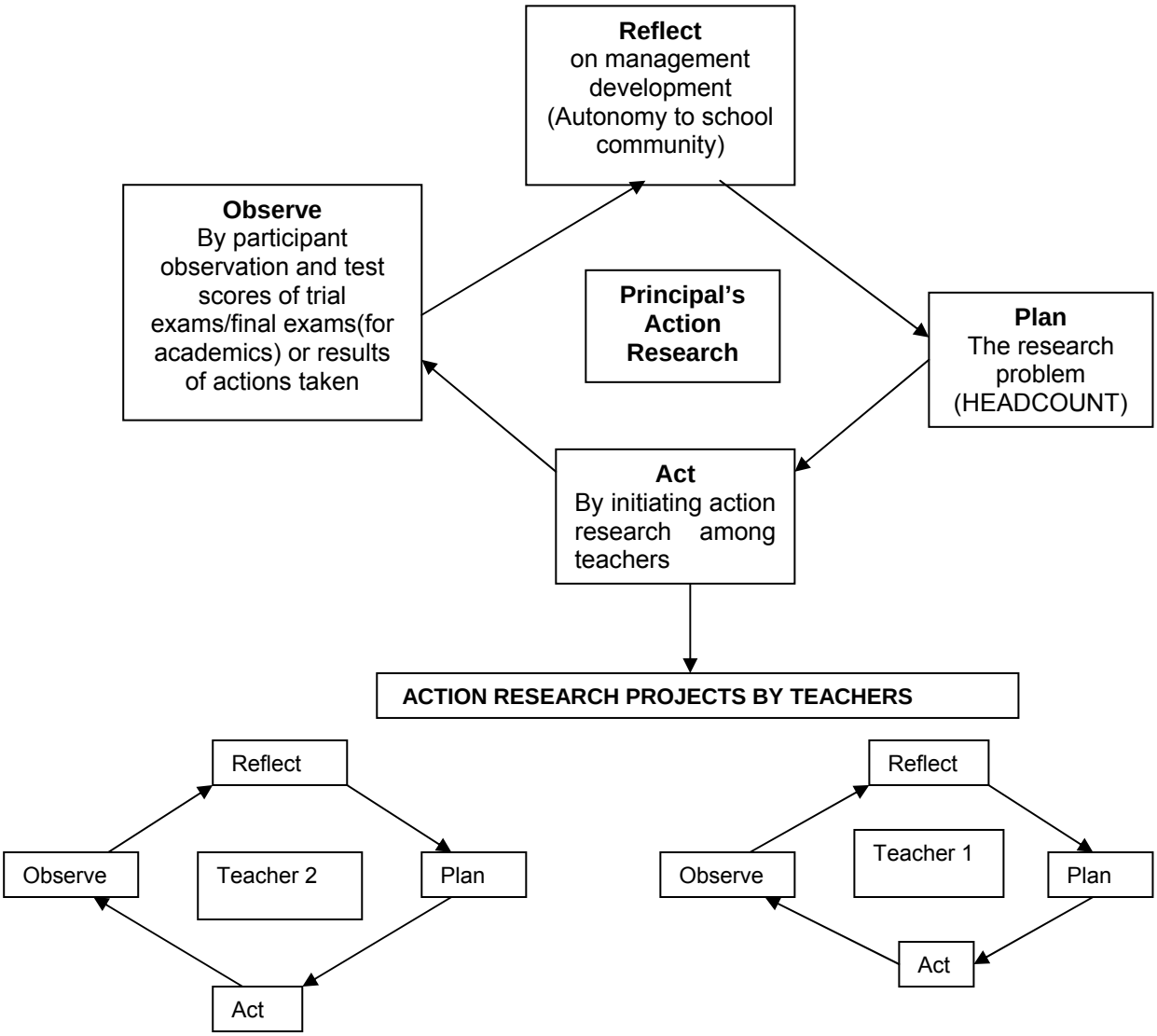

Figure 1 The Conceptual Framework of the Research

6.3 Data Collection and Analysis

During the implementation of the strategies, I (the researcher-principal) would observe the results from the implementation of the strategies. After four weeks of implementing the new strategies, there was a general improvement of the students' attitude towards exam. There was a higher awareness of better time management and students were more ready to pass up homework. Coursework was handed up to the teachers and more written work was given. Teachers were encouraged to talk to me about the changes they saw among the teachers and the students. The canteen operators also commented that there were now fewer teachers in the canteen. However, in my rounds as I walked along the corridors of the classrooms, I still see teachers sitting at their desks and not teaching as there was no

interaction between teachers and the students. Students were still copying from their test papers and workbooks onto their exercise books.

6.4 Assessment

I realized that teachers need to be sent for pedagogical courses to refresh their teaching skills. Teachers who had lost their skills in interacting with students and interest in active teaching need to be counseled and motivated. Some were adamant that what they were doing was correct by stating that if the students were not allowed to copy and do exercises in class would not do it at home. They felt that this way student got to write something otherwise they would not be doing anything. In my opinion such teachers had lost the meaning of imparting knowledge and had taken advantage of the situation at the expense of the students' instructional time. I had to do something about this problem in my next cycle.

7.0 CYCLE TWO: INVOLVEMENT OF THE EXTERNAL STAKEHOLDERS

The model as shown in Figure 1 shows the action research cycle for academic performance. At the same time as the teachers were doing their action research, other departments were also doing theirs, such as the counseling department, the discipline department, the school canteen, the sports department and the library department. From each department, I as the principal helped them to identify the problems and the respective departments had to find ways to overcome the problems that were identified. Table 3 showed the various problems identified and the solutions found to address the problems after action research had been carried out.

In my observation moment, I evaluate the effectiveness of the various programs the teachers and I had implemented. The effective ones were maintained and fine-tuned while the not effective ones were dropped and new ways were tried. As these steps were taken, the ways things were done in the school needed to be changed. In other words, the culture of the school needed to be changed. As it happened in any change, there was bound to be resistance and I knew I was on the right track when I had eggs thrown into my house at night. With this I was certain that I needed to persevere and push forward any changes that were good for the school. Feedback from parents was encouraging and positive. Armed with this, I knew there was no return but to push forward. With the initial antagonism simmered down, I was ready for the second and final step of my action research.

As described earlier, educational improvement involved 'the school' and that meant external stakeholders were included especially when improvement had to be sustainable. For this, I needed the help of the members of the Board of Governors and the PIBG (PTA). At the reflection moment of my second action research cycle, I needed to identify a problem which these external stakeholders and community could contribute. As academic, discipline and day-to-day running of the school were best left to the teachers and staff of the school, the physical infrastructure of the school would best be left to the members of the board and the PTA and community. However, how and what I had to do to initiate such co-operation from them? To make matters worse, I was the first lady principal of this school and these people were assessing me whether I was up to the task. However, having eggs thrown at my house did not turn out to be that bad after all because when they heard about it, they realized that I was tougher than they had initially anticipated. The positive feedback from the parents also worked in my favor as words got round in churches and the

community. I knew I just need them to be involved in the school projects and to invite them I identified a problem for them.

There was a small block of classrooms which was run down and had not been painted for more than 30 years. I planned a community service project whereby students had to paint the block as their project instead of visiting old folks home or picking rubbish from the playground. I involved the members of the board, Old Pupils' Association (OPA) and the PIBG (PTA) by asking them to choose the color that they like that block to be painted. For this project, the chairman for the PTA had direct involvement in the purchase of paint and tools. It was fortunate that he is a civil engineer by profession and taking care of the physical infrastructure was his forte. I had identified the best man for the problem.

The chairman came and gave the students tips on how to paint the walls. When one side of the wall was completed in three weeks, it looked so good that he decided that the whole school should be repainted. He took the initiative to raise funds and mobilized his workers to wash the buildings at his cost. He sourced for donation and demolished the termite-infested building. In its place a two storey building and a new lecture hall would be built. Plans for the building were being drawn up and the necessary approval sought. With the new paint for the school, the community of Sitiawan became aware of the transformation of the school. It became easier for us to source for funds.

The principal incorporated the action research cycles conducted by the teachers in her moment of 'act' and this showed the way internal challenges were met. The participatory cycles were many and each was undertaken by the teachers in school. Teachers carried out their own action research to address problems of the pedagogical and academic nature. The second cycle referred to the actions taken to address problems which the members of the board and PIBG (PTA) could address.

This project was on-going and as long as it did not cease to continue, improvement in the school level was certain. The external stakeholders were responsible for creating a conducive environment for teaching and learning. With each cycle, the school level would be brought higher and this would lead to an overall improvement of the school. The key principles include commitment on the part of the teachers to improve student learning outcomes through greater student participation in the learning process and the teachers untiring search for innovative and creative ways to make their lessons exciting and interesting and on the part of the administration to enable participative decision making among the members of the faculty and by developing ways of removing impediments and constraints to effective teaching and management of the teaching-learning process.

This project incorporated a number of important characteristics of the action research methodology. The aim was educational improvement and it was grounded in the participatory action research. Everybody was involved in the participative process of action and reflection with the focus on improvement. What was unique about this project was that improvement was not only aimed at the improvement of pedagogical practices of the teachers but also, more importantly to the situation in which these teachers' practices took place. This was translated into the organizational practices of the school. It was these organizational practices that took this action research project beyond those that were advocated by the MOE and the state as well as the district educational offices. In this project, it became clear that effective educational practices were not solely dependent on

the good practices of the individual teachers, but to the situation in which the work of the teachers took place. Thus, the organization of the school rendered the crucial impact upon the work of the teachers and the learning of the students.

8.0 CONCLUSION

Action research provided the principles of procedure for a process to take place. One of the principles which advocates and practitioners of action research failed to realize is the principle of participation. Participatory action research leads to school wide educational improvement. As it involves almost everyone in school it can be messy and uneven at least at the initial stages as conflict may arise (Ng, 2007). As it involved all levels in school it led to changes in basic beliefs and practices. When such beliefs and practices were changed, the culture of the school could be changed and with participatory decision making laced with elements of ownership, a climate receptive to change was emplaced. This further reduced the resistance to change and when resistance was eroded, the school could be taken to the next higher level with relative ease.

9.0 THOUGHTS FOR THE FUTURE

Participation not only gave autonomy to the teachers and all the various stakeholders of the school, it also brought with it responsibilities. Thus, this action research project was not only grounded in principles, but also allowed for both autonomy and responsibility. These were commitments to actions and reflections. This project showed that real change was dependent upon ownership of the change, which, in turn depend on the participation in the decisions leading to the change by those most affected by the change, which were the teachers and the students. Future changes would involve participation from various stakeholders so as to ensure sustainable educational improvement. Such approach to school improvement was consistent with statements of Stenhouse (1976) below.

> I believe that long-term improvement of education through the utilization of research and development hinges on the creation of different expectations in the system…The different expectations will be generated only as schools come to see themselves as research and development institutions rather than clients of research and development. …Research in curriculum and teaching, which involves the close study of schools and classrooms, is the basis of sound development, and the growth of a research tradition in the schools is its foundation. …It is not enough that teachers' work should be studied: they need to study it themselves.

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Bookstart

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Abstract

Books *are food for the brain and mind and are a source of life-long learning for children.* ***Books*** *for Children Foundation and The Office of the Education Council, Ministry of Education launched the Bookstart Project, which encourages parents to get their children involved with reading since they are infants. About 106 families with babies, aged six to nine months, participated in the project. The method is simple and easy. Parents only spend 5 to 15 minutes a day reading books to their babies.*

The successful *outcome resulted in parents and child becoming more disciplined in reading, as well as increasing the quality and consistency of family time spent reading together. Families also applied what they gathered from the book content to their everyday life experience. Overall, this project resulted in development of warm and strong family foundations to fully develop the child. Each child was able to develop his/her social, emotional, listening and speaking skills, either on their own or from their parents or care-givers with a "book" as a companion or friend.*

Parents, *children and care-givers live together happily thru books as a media , children are healthy and happy , family can see the importance of reading books and the community understands the importance of reading books and supports the family by using books as a key material in developing a child and creating a warm family atmosphere.*

Within the period of 6 years since 2004 – 2009 of behavior and children development observation finds that children have good behavior and development in all aspects when comparing with children who do not join the project. Academic, expert, teacher including parent and nursemaid have all agreed that book reading create warm relationship between children and parents and together with their closeness help parent pay delicate attention in nourishment.

From comparative study in 51 children competency in project (73.91 percentage of children in project) with 594 children in general (5-6 years old) in nationwide by testing and observation forms of ***Thailand Early Childhood Behavioral Competency*** *finds that children in project have development competency better than children in general.*

Prologue

Bookstart Project is the reading habit promotion in children under one year old. The project is aimed to have parents realize the importance of creating learning opportunity for children at the beginning of age 6-9 months old and take action by reading the book for children including raising the child with book since their childhood. The Bookstart Project began in Thailand in 2004 having idea from British Archetype which initiated in 1992 and also studied pilot project in Japan in 2000.

Bookstart Project was expected to be the process to raise awareness on the relationship between parents and children including nourishment, foundation of physical, emotional, social, ethical, and intellectual development in children by using tales and poetry as essential media in education and learning development for children. The most important aim is to create fun and the relationship between adult and children.

Research Objectives

1. To educate and develop reading habit formation for children aged 6 months – 6 years old by parents / nursemaid
2. To create education form for parents/ nursemaid through reading promotion process and story tales for children
3. To promote children linguistic development by parents / nursemaid through reading promotion process and story tales for children
4. To create relationship between parents and children as important factors for loving and caring in family

Research Framework

Population and Sample Group

1. Parents / nursemaid who are responsible for taking care of children aged 6 months – 6 years old and have services on health care at hospital, health center, child center or state nursery, child care center or any foundations in stated area.
2. Boy and girl aged 6 months – 6 years old who get health service at hospital, health center, child center or state nursery, child care center or any foundations in stated area.
3. Health officials at hospital office, health care center and project volunteers.

Study Variables are Composed of

1. Parent/nursemaid education format
2. Reading habit promotion form in children aged 6 months – 6 years old
3. Book usage behavior in children aged 6 months – 6 years old family

Target Group

1.Case Study group

1.1 The number of 106 parents/nursemaids of children aged 6 months – 6 years old who get services at hospital or health service center, or child center, state/private nursery, and 7 foundations by specific and volunteer sampling.

1.2 The number of 106 Children aged 6 months – 6 years old whose parents/nursemaids voluntary participate in project.

1.3 Health officials who work in hospital, health service center, children development center, or state-private nursery and foundations and project volunteers

Working Area	**Children per year**						**Percentage of decreasing children**
	2004	**2005**	**2006**	**2007**	**2008**	**2009**	
Ratchaburi: children under well baby clinic	25	25	24	24	24	23	8.00
Loei: children in the community	27	26	26	26	19	19	29.63
Bangkok Srinakarin: children under FSCC	10	9	8	7	6	6	40.00
Bangkok Suayai: children under FSCC	13	12	10	8	-	-	100
Thammasart University: children in nursery	6	6	6	6	6	6	-
Mahidol University: children in nursery	7	7	7	7	5	5	28.57
Nakorn Pathom: children under FFC	18	18	9	-	-	-	100
Total	**106**	**103**	**90**	**78**	**60**	**59**	**44.33**

2. General group : nation wide

The number of **15,874** Children aged 6 months – 6 years old whose parents/nursemaids voluntary participate in project.

Methodology

1. Setting Bookstart Project
2. Data collection method
   - Study area survey form
   - ***Basic Data of children and family Record form***
   - Children Development Evaluation form
   - Children Reading Behavior observation form
   - Family book usage behavior interview form

Data Analysis

Data analysis composes of quantitative analysis
by statistics and qualitative analysis by data analysis

Bookstart in Thailand

In 2004, Bookstart Project started in Thailand by Bangkok Lion Club which provided financial supports in procuring bookstart bag set and **The Office of the Education Council,** Ministry of Education, provided financial supports for research on 106 parents with children aged 6 - 9 months. The operation got close cooperation from agencies in stated area liked hospital, non-governmental organizations concerned on children, social welfare child organization, children development center in slum areas and children development center in education institutions.

Since 2004 – 2009, 6 years of operation process have been done steps by steps with straightforward and clear communication without any complications. It helped those parents feel relief as all the questions have concrete answers which contribute to the success of the project. The process is as follows:

1. Join in thinking, money and manpower
2. Operation area and target group selection
3. Culture Education Allied organizations
4. Staff meeting
5. Staffs training workshop in operated areas
6. Books screen
7. Parents/nursemaids Training workshop
8. Bookstart gift set
9. Library pocket set up
10 Home visit
11. Public campaign
12. Policy campaign

First Year of Bookstart Project : Reading Habit Promotion Process in Children Aged under 1 Year Old

With basic needs in one year old children who need love, understanding, warmth, care, and close relationship from people around and surrounding context with generosity and kindness, the bookstart becomes a tool for parents to use as nourishing channel and raise up children at this age to have trust in people around and society in general when they are grown up in the future. Through this way the children will have close relationship and loving care. The feeling of warmth will have impact in living with carefulness that will not affect good relationship with parents and people around since the first year of age.

First Year Tool Set : Book for Children Under 1 Year Old Composed of :

1. Books for parents
2. Books for children under one year old
3. Elephant dolls made of cloth with sound
4. CD with picture presenting the process of book usage for children aged under 1 year old.

Results

Reading book has strong impact in children. It happens quite clearly during the time when parent hold child in arms, or have child sit on lap and then communicate with love by reading books. In other words, parents can keep reading page by page and holding their children with gentle sound and warm touch.

Findings

Apart from making the first year old children have a chance to learn many marvelous things, the first set of bookstart creates home with warm atmosphere, close relationship between parent and children and more of happiness. It also finds clear changes in child raising behavior. That is parents and main nursemaids spend more time with children by singing, story telling and book reading.

The operation has success with significance Chanpen Chuprapawan (Med.) and others studied the operation process of Bookstart Project and found cleared changes in child raising behavior. Parents and main nursemaids spent more time with children, after joining the program, singing, storytelling, and book reading and in particular having more time playing with children with statistical significance in all areas (p-value <0.05). Moreover, he main nursemaid in all areas had self assessment and pointed out that after joining the program, there were clearly hanges within the family including inner family relationship and time spending in doing activities with children as follows:

Changes in family type	Percentage
CHANGE	**83.5**
Closer relationship between parent and children	69.1
Closer relationship among relatives	62.9
Having more understanding of nursemaid in children	83.5
Fast grown up and more intelligent children	79.4
Family members spend more time together	54.2

In the grandfather - grandmother and illiterate nursemaid group, everyone read picture by describing picture, talking with picture by not stressing in word and idea formulated by writer, but with life reading life, and life learning life.
From the study of **Professor Sirikul Isaranulak (Med.)**, it was found that Bookstart Project operation in general has helped create awareness among parents to read book for children and spend more time in doing activities together with their children in all areas.

Consequences from the work
In family with children aged 2-12 years old, the children also participate in bookstart usage such as asking mother to read or read books for younger brother/sister. This is the compensated process in family where main nursemaid has to work and cannot spend much time with children.

Second Year of Bookstart Project; Reading Habit Promotion Process in ChildrenAged 1 – 2 years old

The obvious success of the bookstart project in the second year is that parent has good attitude in reading including reading for children and reading for knowledge and self development.

Book switches children 's intention from unpleasant behavior such as sucking fingers, playing with sexual organ, crying, irritation, frequent moody. Parents who read book with loud voice or presentation can attract and arouse children's interest in books, and touch books so their hands will not be available to act above behavior, which is the effective way in all families.

Third Year of Bookstart Project; Reading Habit Promotion Process in Children Aged 2 – 3 Years Old

The most obvious success is language development

The book with more earnestly matters will attract children aged 2-3 years old better. When parents use contents, pictures and actors in story telling as conversation points, they will make children better understand the meaning of words and sentences and know how to relate story with picture and gain increasingly deep understanding.

Children know more word and language used in speaking and communication. By listening to their parents reading from the book with earnest matters and pictures together with soft tone of reading and rhythm, right words and sentence, children will slowly absorb languages that are repeated and stressed by nature. And when the children listen to their parents frequently, they will

remember the words and speak those words faster and have more words for communication than other children.

Fourth year of Bookstart Project : Reading Habit Promotion Process in Children Aged 3 – 4 Years Old

When studying 64 children and family sampling study, it was found in percentage that:

- 93.75% of children in project have thinking and analysis ability
- 100% of children in the project feel sympathy, mercy and kindness; 71.88% with sweet and tender words; 85.94% have compassion and forgiveness; and 100% have good mood. 70.31% of children in the project have courage in decision making, know to deal with problems properly, and have patience and optimism.
- 93.75% of children in the project have obvious basic morals.

Fifth Year of Bookstart Project : Reading Habit Promotion Process in Children Aged 4 – 5 Years Old

85.71%s of parent constantly read books for their children with an average of 21 minutes and 11 seconds per day.

Obviously behavior of children in Bookstart Project is as follows:

- Interest in seeking for knowledge
- Good language skill
- Positive and systematic thinking
- Good mood
- Good memory
- Self confidence
- Self discipline
- Good concentration
- Art skill
- Good relationship
- Creative thinking and imagination with responsibility

Sixth Year of Bookstart Project : Reading Habit Promotion Process in Children Aged 5 – 6 Years Old

Within the period of 6 years since 2003 – 2009 of behavior and children development Observation, the researchers found that children had good behavior and development in all aspects when compared with children who did not join the project. Academics, experts, teachers including parents and nursemaids have all agreed that book reading

creates warm relationship between children and parents. Their closeness helps parents pay more delicate attention in nourishment.

From the comparative study of 51 children's competency in the project compared with 594 children in general (5-6 years old) in the nationwide test, using observation forms of **Thailand Early Childhood Behavioral Competency,** it was found that 73.91% of children in the project have development competency better than children in general.

Dalil Avu Zar Zad : Teaching Students To Write Jawi And To Recognise Which Jawi Alphabets That Can Be Joined With Other Characters in Written Jawi

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Abstract

This study is aimed at helping students in writing Jawi and to introduce to them better ways in identifying Jawi letters that can be joined in the Jawi writing system. It is also hoped that the new learning method will enhance students' interest in learning Jawi. Samples from four different schools were chosen and they include the primary school pupils from my school, Bukit Kalam Primary School and my husband's school, Pantai Primary School. The secondary school students were from Labuan Technical Secondary School, Labuan Science Secondary School, Lajau Secondary School and Taman Perumahan Bedaun Secondary School. The samples' level of proficiency in writing and reading Jawi script range from low to intermediate level only. After conducting the Dalil Avu zar zad program, the percentage of students passing for both the primary and secondary students has increased tremendousl;y.

1. 0 INTRODUCTION

The *Jawi* alphabetical system is a writing system that has existed for centuries in the *Nusantara* Region. The *Jawi* alphabet comprised Arabic Alphabets that are adapted into the *Malay* language writing system. It is written from right to left and has 6 more letters (sounds) which are not found in Arabic alphabetical system: "ca", "pa", "ga", "nga", "va", and "nya".

The teaching of *Jawi* is one of the components in the Islamic Studies subject stipulated in primary and secondary schools' curriculum. The lesson can be taught to any pupils who are interested to learn. Both the primary and secondary students are facing difficulties in learning Jawi, probably due to their early exposure to the Romanic alphabetical system.

2.0 REFLECTION OF PREVIOUS TEACHING AND LEARNING

As a team, my husband and I would spend a lot of time discussing about our pupils' performances even though we are teaching in different schools. We discovered that most of the low-level proficiency pupils are unable to read, write, and identify correctly single letters that could be combined when writing in Jawi. The problem has been identified for the past nine years. The time allotted in teaching this component is only half an hour weekly. The short duration of each lesson has become a contributing factor towards students' inability to understand the concept of writing in Jawi. Jawi is unique because there are many ways in spelling and combining the letters. When the pupils cannot understand these basic concepts, they will lose interest in learning Jawi. The pupils

perceived Jawi as less important compared to English or Mathematics because it is not tested in Year Six Assessment Test (UPSR) and a very tough subject too! During the lessons, we had to explain the concepts in detail and elaborate on the descriptions occasionally, and at the end of the day, the non-stop instruction made us feel disappointed. We were concerned about the situation, thus we started thinking of ways to make the subject easier and more interesting. We would want the students to place great importance in their achievement of the lesson as well.

Meanwhile, it was discovered that the instructions in the textbook caused confusion among students. Exercises given, mainly, requested the pupils to combine the Jawi letters. Every single letter was followed by the symbol '+'. Most of the students would combine all the letters because of the'+' symbol, when in fact only a certain number of Jawi letters could be combined with other letters. Table 1 and Table 2 show an example of the exercises found in the textbook instructing students to join single Jawi letters.

Table 1
An Example of The Textbook's Instruction for Joining Single Jawi Letter

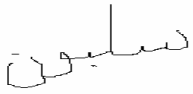
Pupil's answer	Join the single letter below
	س + ا + ب + و + ن

Table 2
The Modification for Easy- To- Follow Instruction when Joining Jawi Letters

Pupil's answer	Join the single letter below
□□□□□	س + ا - ب + و - ن

All the problems and difficulties that the students' faced in learning *Jawi* lead us to one conclusion which is; we need to find a simple technique to teach the concept of writing and combining *Jawi* letters. We developed several techniques and approaches to get the pupils to embrace this local subject. After years of trials and errors and also countless modifications, we finally managed to establish two techniques to solve these issues.

The first technique is named DALIL and it is a technique that helps pupils to be able to write Jawi immediately. The second technique is called AVU ZAR ZAD; a method for identifying which Jawi letters can be combined or should remain single. The students' passing marks increase tremendously after successful implementation of these techniques. Although Jawi is not evaluated in the UPSR examination, it is evaluated in the Lower Secondary Examination (PMR) and Malaysia Education Certificate (SPM) examination. We hope this study will accelerate the progress of Islamic Studies Subject.

3.0 FOCUS OF THE RESEARCH

Our study focused on the most basic and important element, writing and joining of the Jawi letters. The aim of the study is to determine the effectiveness of these two techniques.

i. DALIL Card: A technique to write simple words in *Jawi*.

ii. AVU ZAR ZAD: A technique to identify which letter can be combined with another Jawi letter. (Using add (+) and subtract (-) symbols)

4.0 OBJECTIVE OF STUDY

4.1 General Objective

To enhance the students' proficiency in learning *Jawi* and thus will result in students' excellent performance in the PMR and SPM in the Islamic Studies subject.

4.2 Specific Objectives

i. To increase the students' interest in learning *Jawi*;
ii. To enable the students to write scripts in Jawi; and
iii. To enable students to identify letters in Jawi that can be combined with other letters.

5.0 TARGET GROUP

The target groups were made up of students with different level of abilities from different age group. The first group consisted of 10 pupils from Year 2 Optimis (8 years old with low ability), whereas the second group consisted of 16 pupils from Year 6 Bestari (12 years old with low ability). These two groups were categorized in the same proficiency level and from Bukit Kalam Primary School, W.P Labuan. The third group consisted of 10 pupils from Year 4 classes of Pantai Primary School, W.P Labuan (low and intermediate ability 10 years old). The last group was students from several secondary schools (PMR candidates). The sample consisted of 55 students (low and intermediate ability) from Labuan Teknikal Secondary School, Labuan Science Secondary School, Lajau Secondary School and Taman Perumahan Bedaun Secondary School.

6.0 RESEARCH IMPLEMENTATION

6.1 Identification of Problem

Most pupils were found unable to maintain concentration for the whole period of Jawi lesson. The results of the test papers, exercises and pre-test substantiated our findings that they did not have a good command or a strong foundation of the concept of writing in Jawi. Thus, they were unable to answer the questions correctly. Moreover, pupils depended too much on the teachers to impart the knowledge.

6.2 Observation during the teaching and learning

The pupils in the classroom were divided into 3 groups namely Group A (high proficiency), Group B (intermediate) and Group C (low ability). In terms of grasping the concept of the lesson, pupils in Group C were always last in the line and other Jawi teachers in other classes faced the same problem.

Our study began with a pre-test to identify the weak pupils in two areas of competency. The first competency area tested the students' skill in writing Jawi. Students were given a test

and they were required to rewrite ten words from Roman script into Jawi. In the second test, the students were required to identify which Jawi letters could be combined. The test comprised of ten questions and the pupils need to combine the Jawi letters appropriately. The same test was given to all the pupils in the selected primary school and another set of question was prepared for the students in the secondary schools. We centralized the pre-test for the four secondary schools at the Labuan Education Department Office. We have identified and selected 65 students from different proficiency level as our sample during the pre-test. The results of the tests are as follow:

Table 3
Analysis of Pre-Test Result Year 2 Optimis Bukit Kalam Primary School (10 Pupils)

Test score range	**Grade**	**Before the use of DALIL Technique**		**Before the use of AVU ZAR ZAD**	
		Number of pupils	**Percentage %**	**Number of pupils**	**Percentage %**
10	A	0	0 %	0	0 %
8 - 9		0	0 %	0	0 %
6 – 7	B	0	0 %	0	0 %
4 – 5	C	0	0 %	0	0 %
2 – 3	**D**	**5**	**50 %**	**3**	**30 %**
0 -1	**E**	**5**	**50 %**	**7**	**70 %**
% of passes		**0 %**		**0 %**	
% of fail		**100 %**		**100 %**	

Table 4
Analysis of Pre-Test Result Year 6 Bestari Bukit Kalam Primary School (10 Pupils)

Test score range	**Grade**	**Before the use of DALIL Technique**		**Before the use of AVU ZAR ZAD**	
		No. of pupils	**Percentages %**	**No. of pupils**	**Percentages %**
10	A	0	0 %	0	0 %
8 – 9		0	0 %	0	0 %
6 – 7	B	0	0 %	0	0 %
4 – 5	C	0	0 %	0	0 %
2 – 3	**D**	**1**	**10 %**	**3**	**30 %**
0 -1	**E**	**9**	**90 %**	**7**	**70 %**
% of passes		0 %		0 %	
% of fail		100 %		100 %	

Table 5
Analysis of Pre-Test Result Year 4 Pantai Primary School (10 Pupils)

Range of the test score	**Grade**	**Before the use of DALIL Technique**		**Before the use of AVU ZAR ZAD**	
		No. of pupils	**Percentages %**	**No. of pupils**	**Percentages %**
10	A	0	0 %	0	0 %
8 - 9		0	0 %	0	0 %
6 – 7	B	1	10 %	0	0 %
4 – 5	C	1	1 0%	0	0 %
2 – 3	D	0	0 %	3	30 %
0 -1	E	8	% 80	7	70 %
% of passes		20 %		0 %	
% of fail		80 %		100 %	

Table 6
Analysis of Pre-Test Result Secondary School Students Before The Use of DALIL Technique (35 PMR Candidates)

Test Score range	**Grade**	***Before the use of DALIL technique***	
		No. of student	**Percentage %**
31 – 40	A	0	0 %
21 – 30	B	1	3 %
11 – 20	C	14	40 %
0 - 10	D	20	57 %
% of passes		*43 %*	
% of fail		*57 %*	

A pre-test was used to test and measure the students' proficiency in writing and combining letters.

6.3 Analysis of the Problems Identified

As shown in the table below, students exhibit great interest in the lesson. The analysis was based on the two competencies of writing and combining letters.

Table 7
Pre and Post Test Analysis of Writing Skill After Using The DALIL Technique

School / Year	**% pre DALIL**		**% post DALIL**	
	fail	**passes**	**fail**	**passes**
Year 2 Optimis Bukit Kalam, Primary School	100 %	0 %	0 %	100 %
Year 6 Bestari Bukit Kalam, Primary School	100 %	0 %	0 %	100 %

School / Year	% pre DALIL		% post DALIL	
	fail	passes	fail	passes
Year 4 Pantai Primary School	80 %	20 %	0 %	100 %
Combination of 4 secondary schools (PMR Candidates)	57 %	43 %	17 %	83 %

Table 8

Pre and Post-Test Analysis of Writing Skill After Using The AVU ZAR ZAD Technique

School / Year	% pre AVZZ		% post AVZZ	
	fail	passes	fail	passes
Year 2 Optimis Bukit Kalam, Primary School	100 %	0 %	20 %	80 %
Year 6 Bestari Bukit Kalam, Primary School	100 %	0 %	0 %	100 %
Year 4 Pantai Primary School	80 %	20 %	0 %	100 %
Combination of 4 secondary schools (PMR Candidates)	54 %	46 %	6 %	94 %

Based on the analysis shown above, these two techniques were very helpful in enhancing students' Jawi proficiency.

7. 0 IMPLEMENTATION

The low proficiency students were identified through observations, teaching and learning sessions, classroom exercises, examination results, as well as pre and post-tests. These low proficiency students were tested at different time. First, we conducted a test to identify the students' written Jawi competencies. Secondly, the students were tested on their ability to identify Jawi letters that can be combined. After they have completed their pre-test, we set aside their answers for the analysis later. Their answers were not discussed because the test will be reused as a post-test. We introduced the DALIL and AVU ZAR ZAD techniques to the weak pupils as corrective measures in remedial sessions as soon as they were identified.

7.1 DALIL Card

We had a few interview sessions with the students to gauge their ability in writing Jawi. The questions were based on the lesson, determining the similarities between Jawi and Roman alphabetical system. For example, we asked the students which letter in Jawi is similar to the letter 'b' in Roman script. None of the students could answer the questions. Later, we distributed an letter card called the DALIL CARD to the pupils. The card showed the similarity between Jawi and Roman script. This card used the system of character arrangement based on the combination of the latest *Jawi* grammatical spelling.

We repeated the process. We asked the same questions and the students managed to answer them accurately! For the first exercise, students were asked to write down the similarity for every single Jawi and Roman letters. Then, the students were asked to write ten simple Jawi words. After we were satisfied with their performance, we gave them a simple post-test, which comprised of ten questions. The students are required to rewrite ten simple words from Roman to Jawi script. We discovered that the students successfully completed their test in a brief. None of the students left any questions unanswered. Our efforts were rewarded and we were satisfied with the results. We were there to facilitate the students rather than instructing them what to do. The students utilized the DALIL card as a reference for the entire questions. Before the DALIL card was used as an aid for teaching, the pupils from primary school did not score any mark, but after using it, all students passes the exams. Students' achievement had increased to one hundred percent. Since some of the test questions for the secondary schools student were highly difficult as it involved Jawi grammatical spelling, the secondary school students' results only increased by forty percent.

7.2 AVU ZAR ZAD

—	ا ف و ز ر ذ د
+	Selain huruf di atas

Diagram 1 Jawi letters

Albeit most of them could convert the words correctly to Jawi script, it did not mean that they could combine the letters. Thus, it was discovered that the students had combined the letters without considering whether the letters could be combined. We tested them again with ten questions of combining Jawi letters in order to evaluate their actual ability. As a result, they were found to combine all the letters as shown in the examples below.

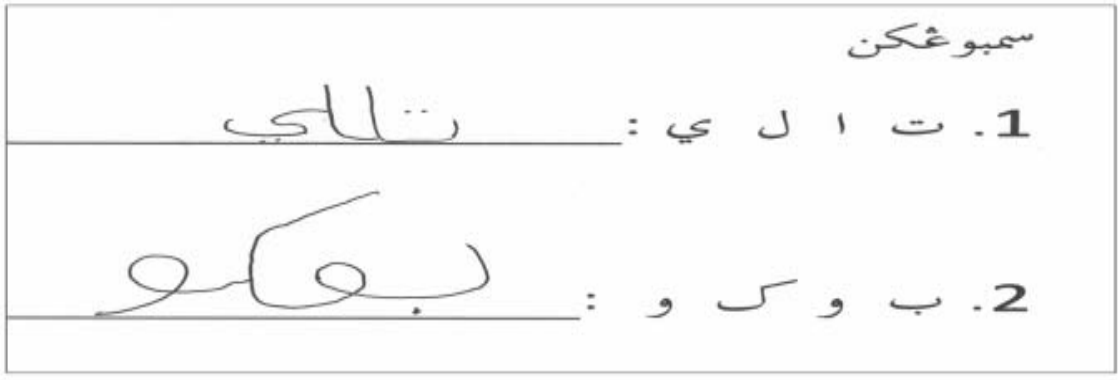


Diagram 2 Exercise on combining Jawi letters

From their answers, we concluded that the students did not know which Jawi letter could or could not be combined. Immediately we began our corrective session. We introduced the 'AVU ZAR ZAD' technique, presenting the Jawi letters that could not be combined. 'AVU ZAR ZAD' is a combination of sounds of Jawi letters: Alif, Va, Wow, Zai, Ro, Zal, and Dal. A subtraction symbol (-) is placed after any letters from 'AVU ZAR ZAD' technique is found in a word. Meanwhile, the addition symbol (+) is placed next to the letter, other than those in the AVU ZAR ZAD technique, whenever it is found in a word.

Diagram 3 AVU ZAR ZAD technique

After introducing the technique, the students did very well in the post-test. For the primary school students, their achievement increased from zero to hundred percent for the two classes in level two. For level one pupil, the passing score had increased to eighty percent while the secondary school students passing rate boosted to ninety-four percent from forty-six percent. From our analysis, we can safely conclude that the overall results indicated positive impact from the use of the two techniques to aid the teaching of writing and combining Jawi letters.

8.0 REFLECTIONS

As far as the results are concerned, we are indeed very grateful because students' marks have improved based on both the pre-test and post-test results. We could see that all the samples have made remarkable improvements in their score. In fact, fourteen students from the secondary schools' managed to achieve full marks (10/10) in the post-test for the difficult questions, when they could only managed scores of 0 to 9 in the pre-test. Meanwhile, for writing skill, the three primary schools pupil samples achieved one hundred percent score in the post-test, when they failed to score any marks in the pre-test. This shows that the DALIL Card and AVU ZAR ZAD techniques really help the the students. Up to now, our students still use the DALIL Card during the lesson. However, for some students who have already mastered the use of DALIL Card and AVU ZAR ZAD techniques, they do not have to refer to the DALIL card or place add or subtract symbols when attempting class exercises any longer.

9.0 SUGGESTIONS FOR FURTHER RESEARCH

This action research has indeed widened our perspective towards the teaching profession, as well as enabled us in identifying the strength and weaknesses of ourselves and our students. Below are suggestions to develop our research in the future:

i. Introducing the Dalil Card and AVU ZAR ZAD technique as early as possible to primary school pupils;

ii. Frequent usage of these two techniques during Jawi lesson so that students will acquire the concept of writing Jawi and consequently, they will not have to refer to the card to improve the writing skills;
iii. Distributing the Dalil Card to other schools so that it can be used to teach other pupils who have similar difficulties learning Jawi.

10.0 CONCLUSION

Based on the research findings, we discovered that there was a positive change in the students' learning practices in Jawi. I hope that the findings will benefit the other teachers in making teaching and learning process more interesting. The techniques have been proven to be effective and teachers could save a lot time in teaching Jawi. It is important that we do not judge our students as being weak or incapable of performing well until we have tried our best in enhancing their skills.

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A Study of Primary 6 Student Perceptions on the Use of Video Diary Lessons

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Abstract

The study on Primary 6 (P.6) students perceptions on the use of video diary lessons was designed with the purpose of providing those in the education field with an example of the use of technology and media to assist in teaching. This study, taking place from May 2008 until June 2008 at Satit Bilingual School of Rangsit University, detailed the design of 3 video diary lessons according to the lesson plan of three math classes prepared by the math teacher at the P.6 level. The video diaries were edited compositions of live-action teaching and animations as well as supporting graphics and transitions. Each video diary of no more than seven minutes length was uploaded to the internet video portal site YouTube as well as the internet social site Hi5. All three video diaries were shown to two separate classes totaling 53 students who were then given a questionnaire following several days of being able to access the video online. Feedback from both classes revealed that the students had positive perceptions toward the use of video diary lessons as a tool for review and for enhancing their learning experience.

Introduction

The changing state of the world that students ultimately graduate into has made it obligatory for teachers to at the least experiment with the use of technology to create a new facet for learning. Video Diaries are a viable choice for teachers, as they are relatively easy to create versus elaborate websites or hi-tech teaching materials and they also have a variety of applications. Many teachers, despite the great availability of video sources, are hesitant to fully integrate instructional videos into their lessons. Swaffar and Vlatten postulated that this reluctance may be due to both uncertainty about and fear of this medium (1997). Thus, how to exploit videos to obtain the fullest benefits is an aspect that requires attention.

Garza (1996) offers this quote from Russian language specialists Vereshchagin and Kostomarov: "…not without reason is it said that it's better to see something once than to hear about it a hundred times". Video allows students to watch a lesson unfold and as noted, this has a marked impact on learning outcomes. A number of educational theories, such as Arousal Theory and Short-Term Gratification Theory, all point to how entertaining media is able to incite interest in a topic matter, allow time for absorption and processing of information, and stimulate emotional responses, among other factors (No Child Left Behind, n.d.).

Video has the potential for both classroom use and self-study, where it could act simply as another component of multimedia instructional packages (Secules, Herron & Tomasello, 1992). In the classroom, it appears that the method that results in the greatest success is to use video to augment a lesson (Griffin, n.d.). Video collections online give teachers the

freedom to seek out and display short sections of a full-length video that match specific goals of a given lesson. Brevity appears to be a key criterion for a video's effectiveness as an instructional material. One teacher noted, "I use clips to enhance a specific part of a lesson - usually only a few minutes at a time - rather than showing a long, 30-minute clip and expecting students to retain all of the information" (Branigan, 2005). The use of short videos meets Canning's (2000) suggestion that videos used in the classroom be "interpretive and to the point". Griffin (n.d.) also advocates the use of shorter videos, as segments can be manipulated in response to the flow of the lesson (for example, the video may be slowed down). Garza (1996) cites research that discovered teachers' perceived optimal length for a video segment was between two to ten minutes. Relevant discreet segments as short as thirty seconds may also be used; however, taking into account the complexity of the video's content, research has suggested that any segment longer than seven minutes in length lessens retention of detail.

Introducing video to a classroom undoubtedly alters classroom routine, and thus, videos require the same planning and forethought that would be necessary for other teaching aids (Swaffar & Vlatten, 1997; Griffin, n.d.). Like all materials, effectiveness only results in careful scrutiny by the instructor. Therefore, another essential caveat to ensure the effectiveness of video use in the classroom is no video which has not been previewed by the instructor should be used (Griffin, n.d.).

Garza (1996) delineates a number of criteria for selecting an appropriate instructional video. Though the suggestions are geared towards choosing suitable videos for a foreign language classroom, many of the guidelines apply equally to videos for use in any kind of classroom, including math classrooms. The first step is to consider the objectives and goals of the particular subject matter. The course's inherent needs must always be at the forefront. Next, a video must have the desired content. Following this, the selector must determine if the video would be of interest to the learners. The video should also lend itself to repeated viewings to help learners thoroughly grasp the presented content. One of the many advantages of a video is the ability to pause and rewind so that a certain section may be viewed again (Griffin, n.d.). Lonergan in Garza (1996) argues that this capability for repeated watching is the key to successful utilization of videos during the instruction process. Branigan (2005) also reports that student scores at investigated schools in the US State of Virginia and the US City of Los Angeles improved due to the fact that students were able to return to particular videos and watch them over and over as many times as they desired.

Additionally, for a video to be effective, a high correlation should exist between the audio and visual components of the video. That is, the audio component should be complemented by, and in some cases, even enhanced, by the visual element. If a strong parallel exists, a video is more likely to be effective in the classroom (Garza, 1996).

Canning (2000), also working in the domain of language teaching and learning, elucidated further conditions for videos to be used in instruction.

"The visual should show reasonable judgment and enhance comprehension, heighten sensory acuteness, and illustrate the target language being used. Practitioners should avoid the use of distracters, over-crowded or violent stimuli. Visuals are ineffective in the learning process when the visual is too small; when the visual or video uses stereotypes; when the visual or video is a poor reproduction; when the picture is too far away from the

text illustration; when the video has irrelevant captioning; when the video or visual offers too much information related or unrelated to the picture; when the video or visual is poorly scaled; and when the picture is not aesthetically meaningful."

To conclude, the literature on the use of video in the classroom points to its positive influence on learning. As long as it is used appropriately, it can become a key tool in the teacher's instructional arsenal. There are at present numerous sources for teachers to obtain videos, be they instructional in nature or authentic. As technology progresses, it is likely the number of video sources – as well as uses for video – will grow and it is up to the savvy teacher to take full advantage for the benefit of his or her students.

Video in the Math Class

Although videos can and are used in every part of a curriculum, mathematics appears to be the subject which has seen the most reluctance to their implementation. One instructional technology coordinator offered the opinion that "Math is the hardest place to get teachers to buy into video as a tool for teaching" (Branigan, 2005). Nevertheless, some studies have found that teaching math and video usage can be integrated. Bottge and Hasselbring (1993) studied the effects of teaching math to two groups of adolescents with learning difficulties using two methods. In one method, students were taught problem-solving skills with standard word problems. The other group was taught using contextualized problems on videodisc. The group that was instructed with the videodisc outperformed their peers on a subsequent post-test and two transfer tasks.

Videos may also be used to demonstrate to students the relevance of their mathematics course content. In one study, the story of a character named Jasper Woodbury was told over a series of six videodiscs. Each of the discs told a part of the story. Contained within each story was mathematical data. Each disc ended with a problem that students had to solve using the embedded mathematical data. The videodiscs presented mathematical information in a realistic context, which demonstrated to students the real-world applications of the math knowledge they were learning in the classroom (Jensen, 1998). Once students make the connection between what is being taught in the classroom and what is required of them in reality, then they can move beyond characterizing a subject such as mathematics as merely something to be "passed for academic reasons", and instead, view it as "an important tool that can be used to solve everyday problems" (Northeastern Illinois University, 2000).

Similar to what has been observed with the use of video in other subjects, learners become engaged by the video when learning math. The study that utilized videos of the character Jasper in the teaching of mathematics had a marked effect on students' attitudes towards the subject matter, with many of them citing a greater interest in mathematics (Northeastern Illinois University, 2000). Videos like the Jasper Woodbury series encourage students to take an active role in their own education and as a consequence, motivation and enthusiasm for the subject matter increase (Jensen 1998; No Child Left Behind, n.d.).

This study originated from the need of the math teacher to delve into a new form of teaching by applying the use of video diaries to enhance students' learning..

Purposes of the Study

The purpose of this study is to produce video diaries to be used with the math class at P.6 level at Satit Bilingual School Rangsit University. It also seeks to document student perceptions on the use of video diaries in class, the responsiveness of students to their use and further insights given by students.

Video Diary in This Study

A "Video Diary" in this study is an edited video composite of a single class period's lesson which contains related animation and/or other elements to reach the goal of the teacher. The video is posted to popular internet portals, such as Youtube and Facebook so that students may view them at their own discretion. Each video is completely self-contained so that it does not require any explanation to students who view them.

Production Process

1. Content Analysis

The first step in the production process of the video diary was to receive all the content that the teacher planned to present during each video and review them for several considerations. The first consideration was to outline the teacher's view of how the video would flow and present the content. The second was to decide, from a production perspective, how the content would translate from the abstract to a visual representation, this included deciphering which parts of the content warranted a graphic, if that graphic would be to evoke interest or to clarify information, and which parts of the content would not lend to being graphically rendered. A final consideration was to plot the pacing of the video based on how much detail needed to be divulged on each topic; which was a matter of feasibility.

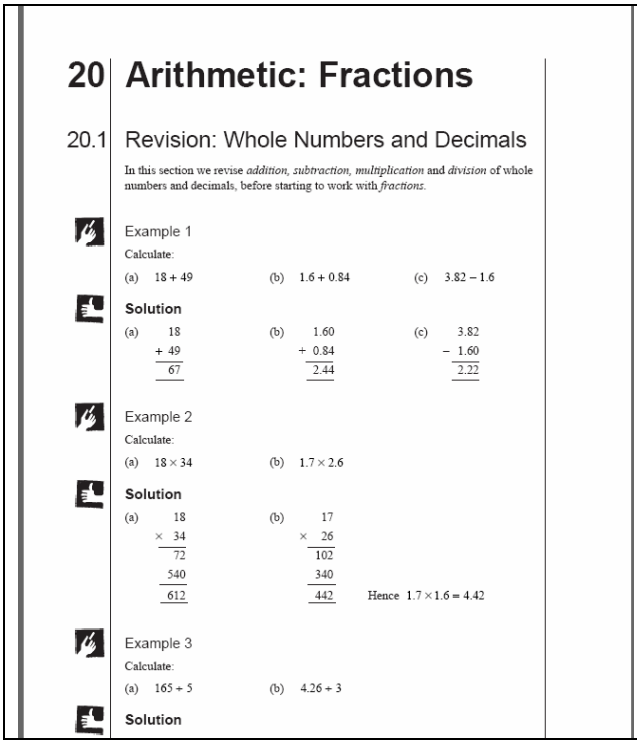
At this step a basic conceptual mock-up was created from a purely production stand point to outline the style, graphic usage and transitioning of each video. The mock-ups integrated the content submitted by the teacher into the video diary format.

Lesson	Time	Objective	Content
Video Diary 1: Adding and Subtracting Fractions	Approx. 6 minutes	- Introduce use and importance of Video Diary - Review adding fractions - Review subtracting fractions	- Adding and Subtracting Fractions - Like denominators - Unlike denominators - Cross multiplying - Diagram
Video Diary 2: Multiplying Fractions	Approx. 6 minutes	- Review multiplication of fractions	- Multiplying Fractions - Fractions vs. Whole Numbers - Diagram - Cancelling - Simplifying

Lesson	Time	Objective	Content
Video Diary 3: Dividing Fractions	Approx. 3 minutes	- Review dividing fractions	- Dividing Fractions - Using multiplication in division

Video Diary 1 Mock Up: Adding and Subtracting Fractions

	Diary Head inserted over video header template. Template header will be followed by welcome message exclusive to Video Diary 1, suggesting usage and importance of Video Diaries.

 **20 Arithmetic: Fractions** 20.1 Revision: Whole Numbers and Decimals In this section we revise *addition*, *subtraction*, *multiplication* and *division* of whole numbers and decimals, before starting to work with *fractions*. Example 1 Calculate: (a) 18 + 49 (b) 1.6 + 0.84 (c) 3.82 – 1.6 **Solution** (a) 18 + 49 = 67 (b) 1.60 + 0.84 = 2.44 (c) 3.82 – 1.60 = 2.22 Example 2 Calculate: (a) 18 × 34 (b) 1.7 × 2.6 **Solution** (a) 18 × 34 = 72, 540, 612 (b) 17 × 26 = 102, 340, 442 Hence 1.7 × 1.6 = 4.42 Example 3 Calculate: (a) 165 ÷ 5 (b) 4.26 ÷ 3 **Solution**	Review to be excluded.

20.2 Addition and Subtraction of Fractions

In this section we consider how to add and subtract fractions. The key step in this process is to make sure that both fractions have the *same denominator*.

Example 1

Calculate:

(a) $\frac{1}{5}+\frac{2}{5}$ (b) $\frac{5}{6}-\frac{1}{6}$

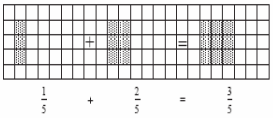
Solution

(a) As the denominator is the same in both fractions, we simply add the numbers on the top of the fraction to give

$$\frac{1}{5}+\frac{2}{5}=\frac{1+2}{5}$$

$$=\frac{3}{5}$$

This addition is shown in the diagram below:



$\frac{1}{5}$ + $\frac{2}{5}$ = $\frac{3}{5}$

(b) The denominator is the same in both fractions, so

$$\frac{5}{6}-\frac{1}{6}=\frac{5-1}{6}$$

$$=\frac{4}{6}$$

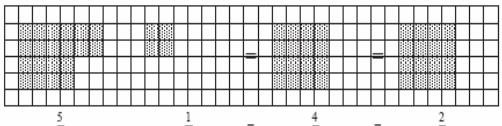
$$=\frac{2}{3}$$

"Adding and Subtracting" graphic-text title inserted as teacher presents lesson.

Example 1 on the page can be presented in the Video Diary through the teachers own white board writing, similar to how it would be illustrated during a normal class. Graphic-text using same style as title can be used to highlight changing subtopics "Like Denominators" and "Unlike Denominators".

A secondary style of graphic text will be used to emphasize key concepts and terms of the example such as the term Cross Multiplying.

This is shown in the diagram below:



$\frac{5}{6}$ – $\frac{1}{6}$ = $\frac{4}{6}$ = $\frac{2}{3}$

Example 2

Calculate:

(a) $\frac{1}{4}+\frac{2}{5}$ (b) $\frac{2}{3}-\frac{1}{4}$

Solution

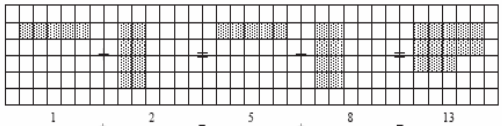
(a) These fractions do not have the same denominator, so the first step is to change them so that they do. In this case, we can use 20 as the common denominator.

$$\frac{1}{4}+\frac{2}{5}=\frac{5}{20}+\frac{8}{20}$$

$$=\frac{5+8}{20}$$

$$=\frac{13}{20}$$

This is illustrated in the diagram below:



$\frac{1}{4}$ + $\frac{2}{5}$ = $\frac{5}{20}$ + $\frac{8}{20}$ = $\frac{13}{20}$

The illustrations on this page serve as a convenient addition to the Video Diary and can be easily incorporated by simply projecting an image of the illustration onto the white board in real time.

The projection will allow the teacher to walk through the illustration.

Camera work should follow the teacher's speech and focus on the appropriate parts of the illustration.

	Diary foot inserted into video foot template. Animated graphic-text follows closing remarks of teacher.

Video Diary 2 Mock Up: Multiplying Fractions

	Diary Head inserted over video header template.

20.3 Multiplying Fractions

In this section we extend the ideas of Unit 10, where you multiplied fractions by numbers, to now include multiplying fractions by fractions.

Example 1

Calculate:

(a) $\frac{1}{3}$ of £24, (b) $\frac{2}{5}$ of £40, (c) $\frac{3}{7}$ of 35 m.

Solution

(a) $\frac{1}{3}$ of £24 $= \frac{24}{3}$

$= £8$

126

"Multiplying Fractions" graphic-text title inserted as teacher presents lesson.

Example can be illustrated on white board by teacher, no usable projector image.

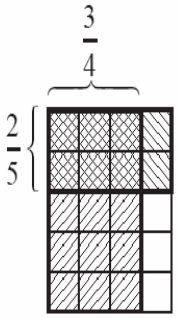
Camera should follow examples closely, cropping into writing on white-board with teacher off-screen.

Calculate $\frac{2}{5} \times \frac{3}{4}$.

This is illustrated opposite:

The area shaded twice represents $\frac{3}{4} \times \frac{2}{5}$, so

$$\frac{3}{4} \times \frac{2}{5} = \frac{6}{20} = \frac{3}{10}$$



The rule for multiplying fractions is:

$$\frac{a}{b} \times \frac{c}{d} = \frac{a \times c}{b \times d}$$

Expansion of writing into diagram will also be done on white-board.

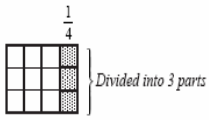
Camera closes in on diagram but interchanges between wide view revealing teacher to reestablish style of diary.

Example 3 Calculate: (a) $\frac{4}{7}\times\frac{3}{5}$ (b) $1\frac{3}{4}\times\frac{2}{3}$ (c) $1\frac{1}{2}\times 3\frac{1}{3}$ **Solution** (a) $\frac{4}{7}\times\frac{3}{5} = \frac{4\times 3}{7\times 5}$ $= \frac{12}{35}$ (b) $1\frac{3}{4}\times\frac{2}{3} = \frac{7}{2\cancel{4}}\times\frac{\cancel{2}^{1}}{3}$ (*Note:* it is usually quicker to cancel down at this stage rather than at the end.) $= \frac{7\times 1}{2\times 3}$ $= \frac{7}{6}$ $= 1\frac{1}{6}$ (c) $2\frac{1}{4}\times 3\frac{1}{3} = \frac{\cancel{3}^{3}}{\cancel{4}_{2}}\times\frac{\cancel{5}^{5}}{\cancel{3}_{1}}$ $= \frac{3\times 5}{2\times 1}$ $= \frac{15}{2}$ $= 7\frac{1}{2}$	Graphic-text in style differing from title and term text will be used to highlight supplemental concept of "Cancelling". Example and review can be done on white-board.

	Diary foot inserted into video foot template. Animated graphic-text follows closing remarks of teacher.

Video Diary 3 Mock Up: Dividing Fractions

	Diary Head inserted over video header template.

20.4 Dividing Fractions In this section we consider how to divide fractions and whole numbers by either whole numbers or fractions. Example 1 Calculate $\frac{1}{4} \div 3$. **Solution** You can deal with this problem by thinking about the fraction being divided into 3 parts. $\frac{1}{4}$ of the diagram has been divided into 3 parts:  Each of these parts is $\frac{1}{12}$ of the whole, so $\frac{1}{4} \div 3 = \frac{1}{12}$ We can also obtain the result in this way: $\frac{1}{4} \div 3 = \frac{1}{4} \times \frac{1}{3}$ $= \frac{1}{12}$ which uses the rule: $\frac{a}{b} \div c = \frac{a}{b} \times \frac{1}{c}$	"Dividing Fractions" graphic-text title inserted as teacher presents lesson. This video diary will begin with an exposition to dividing fractions showing their relationship to multiplying fractions. Short trivia question to be posed through fourth wall. Video pauses with animation to illustrate time for thinking before teacher reveals answer to trivia.

	Graphic-text highlights concept “You can only Cancel when you’re Multiplying”.

	Diary foot inserted into video foot template. Animated graphic-text follows closing remarks of teacher.

2. Conferencing

Once the contents of the lessons were analyzed and conceptual mock-ups were created, the next step taken was to meet and conference with the subject teacher. This was done to insure that the content was not distorted during the conceptualization of the video diary's and moreover to insure that mock-ups represented a video diary that would be conducive to reviewing the lesson and would create understanding of the information presented. During conferencing the mock-ups were adjusted where appropriate and also the teacher's own participation in the video diary was prepared. Since the teacher would be the presenter in the video diary, his performance had to be planned and rehearsed and was a main agenda of the conferencing step.

3. Development

The development step of the production process was the actual filming and editing to create the video diary. Filming of the diary's followed the mock-ups closely with several versions of each segment being shot for editing purposes. Equipment limitations during this step of process were a key concern and much attention had to be devoted to reconciling equipment shortcomings and hindrances such as lighting and sound.

Lighting was crucial as the final product would be of a reduced quality suited for internet streaming. The greatly compromised quality of internet video would mean that small details would easily be lost and compositional factors such as shadow and exposure would be distorted. The approach to this problem was to minimize shadow to the greatest degree possible and pay attention to adequately lighting needed details such as white board writing and projector images.

An issue found with sound was the cancellation of background noise and the presence of the teacher's speech. Once again the reduced quality of internet video would also affect the audio quality making speech slurred and unclear and sometimes masking speech with equal volume background noise. This was mainly a limitation of the equipment as no external microphone system was available to capture the speech separate to the background noise. Minimizing background noise during the recording of the diary and then digitally enhancing the speech helped to minimize the problem and resulted in adequately audible speech.

4. Trial and Review

Once the video diaries were edited into the mocked-up format several trials had to be conducted and reviewed. The initial trial and review of the diaries was to have the subject teacher decide that they fulfilled the objectives of the lesson and offered a concise review of the class content. During this step the diaries were once again checked to determine if they distorted or detracted from the important points and information of the lessons.

Subsequent trials of the diaries were to test technical aspects such as optimal ratios for internet streaming, bitrates and video format. Several different video formats and bitrates were tested to find the optimal audio and video configurations to stream on the internet. The chosen format and bitrate gave the clearest audio and visual possible to be uploaded to an internet video portal.

Showing Video Diaries

The first and most integral step in collecting data for this study was the showing of the video diary. As was mentioned before and as is a main agenda of this study, the video diaries were to be used both to enhance a lesson as it is occurring and to serve as a tool for review by students on their own time, for the two stated purposes the videos were shown initially in class as part of the lesson and then posted to internet video portal YouTube so that they could be viewed at the students' own discretion. Not only were the videos posted to YouTube for internet access, the uploaded versions of the video were also incorporated into a Hi5 account, which is a presently popular social site. The account was made under the name of the class' teacher and was made known to students so that they could easily access all three videos whenever they felt the need.

During their first in-class showing the videos were introduced and explained by the teacher, giving an impression of their use in the class. After the videos were shown, their URL was written on the white-board so that students were reminded of their location for several days and students were encouraged to subscribe to the Hi5 account containing the videos.

Administration of Questionnaire

The administration of the questionnaire was handled by the teacher of the two math classes studied, with total number of students 53. Attention was mostly devoted to the timing of the questionnaire's administration as it had to coincide to two events, the showing of the video diaries in class as well as the time needed for students to watch the videos on the internet at their own discretion. These two factors meant that the questionnaires had to be administered after the video diaries were shown in class with the addition of several days for students to be able to view them again online.

Statistical Analysis

Percentage was used in analysis of the data from the questionnaire which used a five- point scale, ranging from 1-5, where 1 means the least or not at all, 2 means a little bit, 3 means medium, 4 means quite a bit and 5 means a lot or most. The results of the analysis of the students perceptions were presented below, by class and by gender.

Question 1" Did you think the video diary in class was interesting?"

In Class 1 it was seen that both male and female students marked "medium" on the questionnaire with more than half of both males and females rating their level of interest at 3, a substantial amount of the males in Class 1, however, approximately 35.29%, rated their interest at 4 or "quite a bit". Only a small amount of both the males and females of Class 1 chose ratings below 3 in answering Question 1. In Class 2, a prevalence of the highest rating is seen for both male and female students followed by almost equal ratings of 3 in both genders. Overall it can be summarized that a strong majority of students in both classes saw the video diary in class as interesting with almost none feeling it was uninteresting.

Table : Q1-Set1

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	0	0	6	2	2	10
Male	2	1	7	6	1	17

Table : Q1-Set2

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	0	0	5	2	5	12
Male	0	2	5	1	6	14

Note: 1= not at all: 2= a little bit: 3= medium; 4= quite a bit; 5 = a lot

Question 2 "Was the video diary helpful to your studies in class?"

In Class 1 it was seen that up to 60% of the class's female students rated the video diary in class helpful at 4 with 52.94% of the males agreeing with them. Both genders to a lesser degree agreed that the video diaries helped a lot. No female students chose any other rating. Only 1 of the 17 males in Class 1 marked a rating below 3. In Class 2 once again the rating of 4 was given by a majority of both male and female students with remaining female students divided amongst the ratings of 3 and 5. Again it can be observed that a majority in both classes agreed that the video diary was helpful in its application in class. It could be noted however that only the males in both classes gave a rating of 2, deeming the videos only "a little bit" helpful.

Table : Q2-Set1

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	0	0	0	6	4	10
Male	0	1	2	9	5	17

Table : Q2-Set2

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	0	0	3	7	2	12
Male	0	3	1	7	3	14

Note: 1= not at all: 2= a little bit: 3= medium; 4= quite a bit; 5 = a lot

Question 3 "Rate how often you viewed the video diary online?"

Half of the female students in Class 1 admitted to watching the video diary online only "a little bit" with the rest dispersed between "medium" and "not at all" with only a single female student marking "quite a bit". Up to 41% of Class 1's male students answered "a little bit" with 35% marking "medium" and 23.33% admitting to not watching the videos online at all. The female students of Class 2 had a diverse response to this question with 25% marking 2, 25% marking 3, 25% marking 4, 16.66% marking 5 and 8.33% marking 1. The male students of Class 2 saw 21.4% marking 1 with equal amounts marking 3 and 4. Up to 33% of Class 2's males rated their frequency of viewing at 2 and a single student watched the videos online "a lot". Most students in both classes rated their frequency of viewing the video diary online as "a little bit".

Table : Q3-Set1

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	2	5	2	1	0	10
Male	4	7	6	0	0	17

Table : Q3-Set2

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	1	3	3	3	2	12
Male	3	4	3	3	1	14

Note: 1= not at all: 2= a little bit: 3= medium; 4= quite a bit; 5 = a lot

Question 4 "Did you use the online video diary to review the lesson?"

More than half of the female students in Class 1 used the video diary to review the lesson with 50% marking 3 as their answer and another 20% marking 4. The males of Class 1 however showed a different response with approximately 41% rating their use of the video diary to review at "not at all" with an additional 17.65% rating their use at "a little bit". The remaining 29.41% of the male students in Class 1 rated their use of the video diary to review at "medium". Half of Class 2's females rated their use of the video at 2 with the 1, 4 and 5 ratings being marked by one student each and 3 students giving the rating of 3. The ratings of 2 and 3 were given by 28.57% of the males in Class 2 each while 21.43% did not use the Video Diaries at all; 14.29% answered that they had used the videos to review "a lot" and one student marked "a little bit" for his rating. Class 1 overall saw ratings concentrated at the medium point and lower into "not at all" but a handful of the class' female students did rate their viewing of the videos for review at "quite a bit". Class 2 had a somewhat more diverse response in this question but still had most students rating their use of the video for review in the negative end of the spectrum. It may be noted that during the period leading up to the questionnaire the class did not have any tests or quizzes planned and thus review through any means may not have been necessary.

Table : Q4-Set1

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	3	0	5	2	0	10
Male	7	3	5	0	2	17

Table : Q4-Set2

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	1	6	1	3	1	12
Male	3	4	4	1	2	14

Note: 1= not at all: 2= a little bit: 3= medium; 4= quite a bit; 5 = a lot

Question 5 "If you were absent from school, would the video diary help you do the homework?"

In Class 1 both male and female students gave the highest rating with 60% of the female students and 47.06% of males in the class answering "a lot". In Class 2 the high ratings continued but are divided amongst the female students who had 58% giving the rating of "quite a bit" and 50% of the male students giving the rating of "a lot". Nonetheless, both classes only answered on the positive side of the spectrum without any students rating the usefulness of the Video Diaries in the event of absence below "medium".

Table : Q5-Set1

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	0	0	0	4	6	10
Male	1	0	3	5	8	17

Table : Q5-Set2

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	0	0	1	7	4	12
Male	2	0	2	3	7	14

Note: 1= not at all: 2= a little bit: 3= medium; 4= quite a bit; 5 = a lot

Question 6 "Will you use the video diary lesson to review for future tests and exams?"

In Class 1 it can be seen that 60% of the female students rated their tendency to use the Video Diaries for review for future tests at 4 with the remaining 40% rating their tendency

at 3. The males of the class had a more diverse response with 35.29% giving the 4 rating, followed by 29.4% rating 3, 17.64% rating 2 and 5.88% (or one student) giving the 5 rating respectively. In Class 2, 41.66% of the class' female students said they had a medium tendency to use the Video Diaries for review with another over 40% rating on the positive side of the spectrum. The male students of Class 2 had similar responses with the majority of the class placing their ratings from 3-5. The results for this question serve to pick up where Question 4 left off by asking students their tendency to use the Video Diaries to review in the future event of a test of or quiz. It can be clearly seen in the results that a majority of the students in both classes had strong expectations to use the Video Diaries to aid in their reviews.

Table : Q6-Set1

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	0	0	4	6	0	10
Male	2	3	5	6	1	17

Q6-Set2

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	1	1	5	2	3	12
Male	2	2	3	4	3	14

Note: 1= not at all: 2= a little bit: 3= medium; 4= quite a bit; 5 = a lot

Question 7 "Do you want to see more video diary lessons in class?"

In Class 1, 80% of the female students are divided amongst ratings of "medium" and "quite a bit" with 10% answering "a lot" and another 10% answering "a little bit". The male students in Class 1 mostly chose "medium" or "a lot" as their answer with approximately 82% choosing one of the two answers while the remaining 18% were divided equally between "a little bit" and "not at all". Class 2 had very similar results with a notable spike in the class' male students who chose "a lot". Both classes showed a degree of enthusiasm to see more video diary lessons in class with Class 2's male students giving a very positive response to the idea.

Table : Q7-Set1

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	0	1	4	4	1	10
Male	2	2	7	0	6	17

Table : Q7-Set2

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	0	1	4	3	4	12
Male	1	0	4	2	7	14

note: 1= not at all: 2= a little bit: 3= medium; 4= quite a bit; 5 = a lot

Question 8 "Do you want to see more video diary lessons online?"

In this question, Class 1 shows a noticeable difference between its female and male students with a majority of the female students giving a rating no less than 3 while the male students had a mixed response ranging across the spectrum. Class 2 however had a generally unified response from both male and female students, both answering on the positive side of the spectrum with most male students giving the highest rating. The response in this question is in contrast to Question 7 which had both classes showing relative enthusiasm to have more Video Diaries incorporated into the classroom. The difference between this and the previous question is of course in that it asks whether

students want to see more videos online. Overall, there was a varied response to this question.

Table : Q8-Set1

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	1	0	3	6	0	10
Male	5	2	6	2	2	17

Table : Q8-Set2

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	0	0	5	6	1	12
Male	2	0	2	3	7	14

Note: 1= not at all: 2= a little bit: 3= medium; 4= quite a bit; 5 = a lot

Question 9 "Would you recommend the video diary lessons to your friends?"

Class 1's female students equally saw 40% rating their answer either "quite a bit" or "a little bit" with the remaining 20% choosing "medium" as their answer. Six of the seventeen male students in Class 1 rated "a little bit" as their response with another 4 out of 17 rating "not at all". In Class 2 a definite distinction between the female and male students can be seen with the majority of female students answering on the positive side of the spectrum, while the majority of male students answered on the negative side of the spectrum. Overall, both classes showed little enthusiasm when asked if they would recommend the video diary lessons to their friends. Such a response may be a signifier as to their actual opinion of the vide diaries.

Table : Q9-Set1

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	0	4	2	4	0	10
Male	4	6	1	4	2	17

Table : Q9-Set2

Sex	(1)	(2)	(3)	(4)	(5)	total
Female	0	1	4	4	3	12
Male	5	3	0	2	4	14

Note: 1= not at all: 2= a little bit: 3= medium; 4= quite a bit; 5 = a lot

Comments given by students showed that they mostly enjoyed and thought the video diaries were helpful. Some students, who mentioned their lack of proficiency in English made it difficult to understand the diary lessons, thought that the diary was a good and easy way of learning since there were no interruptions while learning. Conversely, some students thought that the lack of a real teacher didn't allow them to ask questions when they did not understand.

Conclusion

While Video Diaries for the purposes of this study were created in a very specific and precise way with an expressed purpose and function, videos in the classroom are ultimately another visual aid that teachers have available to them. In deciding whether or not a video used in class and as a revision tool is effective, the truth must be held that videos in their worst application and performance are only reduced to being a visual aid. With this reality in place, video diaries cannot be deemed as effective or ineffective in aiding students and teachers in the classroom but they can be judged by what extent they fulfill their objective. If a video diary is merely used to make a standard classroom more dynamic and interesting

to students without aiming to notably boost comprehension of the material, then they should not be judged in terms of comprehension.

The purpose of this study was not to create video diaries that exceptionally boosted comprehension and academic performance for students, but was purely to document student perceptions as to their application. One factor that may lend itself to being used in terms of comprehension was that the classes where video diaries were applied in this study were math classes. Past studies have usually avoided the subject with many producers and educators believing that such visual aids do little to assist in the learning of math due to its logical and non-visual nature. However, through research alone, it was found that helping students build an interest in the usually off-putting subject can be done through the use of video and again the use of the videos as a review tool are not lost in the realm of arithmetic.

In terms of how the videos will be used as a review tool for students normally choose to not review for class. The video diary may be more familiar to students as a non-academic endeavor as it is both a media piece and is found on their frequented internet sites. If the guise of a laborious text can be lifted from the material, then students may be enticed to be more diligent about their studies through the pure fact of not being aware of the inherent bookishness of their action. Collected data showed that overall students in both studied classes responded positively to the video diaries with most feeling that they were a viable tool for review and that they were interesting enough to make a regular class more dynamic.

With limitations in the study such as time and equipment, the fact remains that teachers can create videos to be used in class or on the internet with relative ease. Each of the videos used in this study required approximately an hour to tape and 2-3 hours to edit on a home computer. A day of work that could be devoted to the creation of any of a number of visual teaching aids could be used to create one or several video diaries with many more benefits as stated in this paper's literature review. At the very least the creation of a single video diary has the benefit of being usable to students both in the class and at home without any further effort from teachers.

Recommendation

This study was an observation of a limited use of video diaries and thus leaves much space for further trials in the same format. Nonetheless, this study should be adequate enough to prompt teachers to seriously consider the creation and utilization of video in their classes by showing a blueprint for their production as well as detailing student responses which warrant application.

In the modern age of internet availability and a multi-media infused world, this study should serve as one of a multitude of catalysts for teachers to embrace technologies that are a benefit to their work and moreover the education of students. The progressive instructor is bound by duty to learners to apply the use of video and the internet into their curriculum.

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Solving Mathematical Problems in "Money, Mass, Length and Volume" Involving 2U in 4 Operations Using "Magic Box" and Producing 3A

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Abstract

The topics Money, Mass, Length and Volume are popular and frequently tested in the UPSR examinations. However, most students do not master them. Hence, this study is conducted to overcome the problems faced by the 28 "Form 5 Nilam" students in mastering these topics. The method used is quite easy and does not involve any cost. It only involves thorough explanations regarding the concepts learnt and will subsequently lead students to answer accurately and correctly based on the Magic Box. This method is effective and suitable for students with multiple abilities. The Magic Box is user friendly, easy to draw and handle, thereby producing good results. This was proven through series of tests conducted, whereby students scored excellently. In fact, all the teachers involved gave good and positive comments on this method. It has achieved its objectives in helping the students to master the concepts of addition, subtraction, multiplication and division for two different units of measurement. This method does not incur any cost, is effective and suitable to be carried out to both primary and secondary school students.

1.0 REFLECTION ON PAST TEACHING AND LEARNING

Mathematics is not a favourite subject among students especially those who are weak in their multiplication tables. However I have tried to reverse this kind of mentality. In 2008, I taught Mathematics for Year 4 and Year 5 students. Teaching them for the first time, I found that they were weak in the topics Mass, Length and Volume especially in simple operations like addition and subtraction.

Due to this factor, I decided to help these students overcome their problems. Before this, they were using an old method to solve their Mathematical problem. This old method is difficult, time consuming and not effective especially with the weaker students. In examinations, students using the old method need more time and they have higher chances of making mistakes.

The use of the new method known as the "Magic Box" enabled students to overcome the above constraints, thus helping them score good grades in their PKSR examinations as they could solve problems on Money, Mass, Length, and Volume well.

2.0 CONCERNED ISSUE

Despite having constraints such as carelessness, determining place value and not being well versed in their multiplication tables, topics on Mass, Length and Volume are still being taught in one single lesson. The difference is just in the units used. In the UPSR

examination, generally eight questions will be tested under these three topics. Hence, understanding these topics will create a greater chance for these students to score in Mathematics with better grades.

Some errors students frequently made include:

i. not reading questions correctly,
ii. not analysing the data given in the questions, and
iii. not understanding the given questions and identifying the operations needed to solve them.

Once the students were taught the method of solving the questions, they would gain confidence and be able to answer the given questions correctly. Another interesting fact regarding this new method is its ability to reinforce student's memory on the topics, eventually preventing them from committing common errors.

3.0 OBJECTIVE OF STUDY

3.1 General Objective

To increase the number of passes among Year 5 pupils in Mathematics.

3.2 Specific Objectives:

i. To assist students to master the 'place value concept' in two different units.
ii. To assist students to master addition between two different units.
iii. To assist students to master subtraction between two different units.
iv. To enable students to solve problems involving two different units.
v. To enable students to produce three different forms of answers involving addition and subtraction.

4.0 TARGET GROUP

This study involves 28 students from "Year 5 Nilam" which is the second last class among the 6 classes of Year 5.

5.0 IMPLEMENTATION OF THE STUDY

5.1 Pre-Test

For the purpose of acquiring initial data and information, a pre-test was conducted. The topics tested were of Mass, Length and Volume of Liquid. From my observation, I found that students were unable to attempt and answer the questions properly. Furthermore, some students left the questions blank without making any effort to answer them.

5.2 Pre-Test Analysis

Table 1
The Result of The Pre-Test

NAME	MARK	GRADE
Student 1	12	E
Student 2	0	E
Student 3	8	E
Student 4	6	E
Student 5	8	E
Student 6	13	E
Student 7	0	E
Student 8	8	E
Student 9	11	E
Student 10	15	E

The analysis show that:

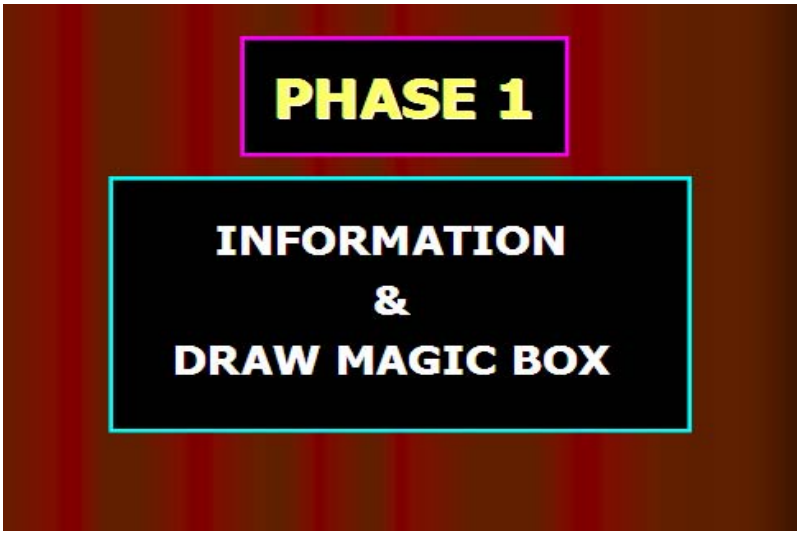
i. students were unable to acquire or master the skills needed to solve the Mathematical problems,
ii. students were complaining about the lack of time to answer the test questions. This was because they spent too much time calculating multiplication tables by adding the numbers repeatedly.

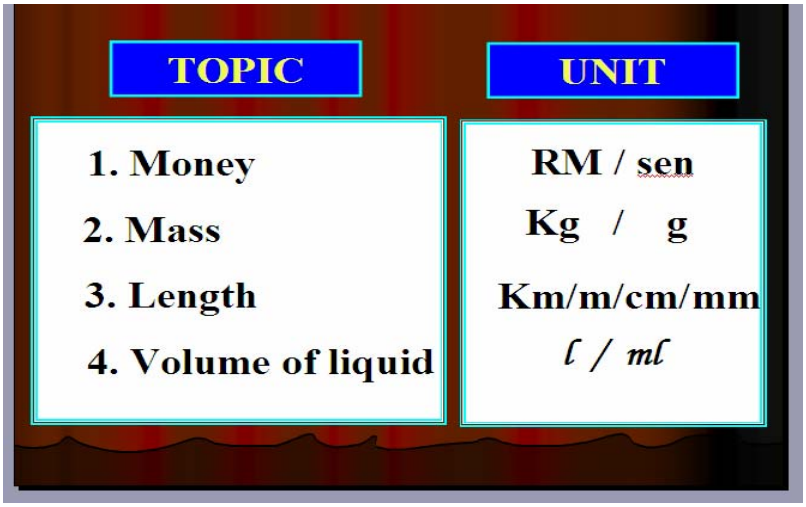
6.0 IMPLEMENTATION OF THE ACTION RESEARCH

Table 2
Implementation of Action Research

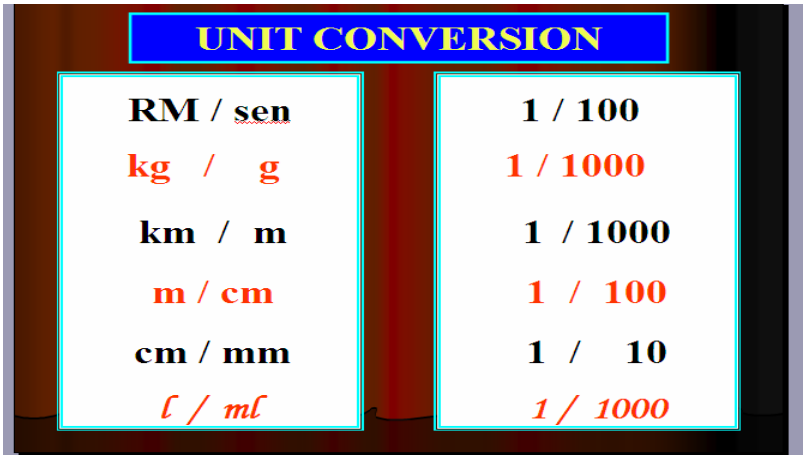
STRATEGY	ACTIVITY	DURATION
Phase 1	Draw the Magic Box	April
Phase 2	Arrange the place value	April
Phase 3	Convert the unit	May
Phase 4	Four operation	June

6.1 Phase 1: Draw the Magic Box

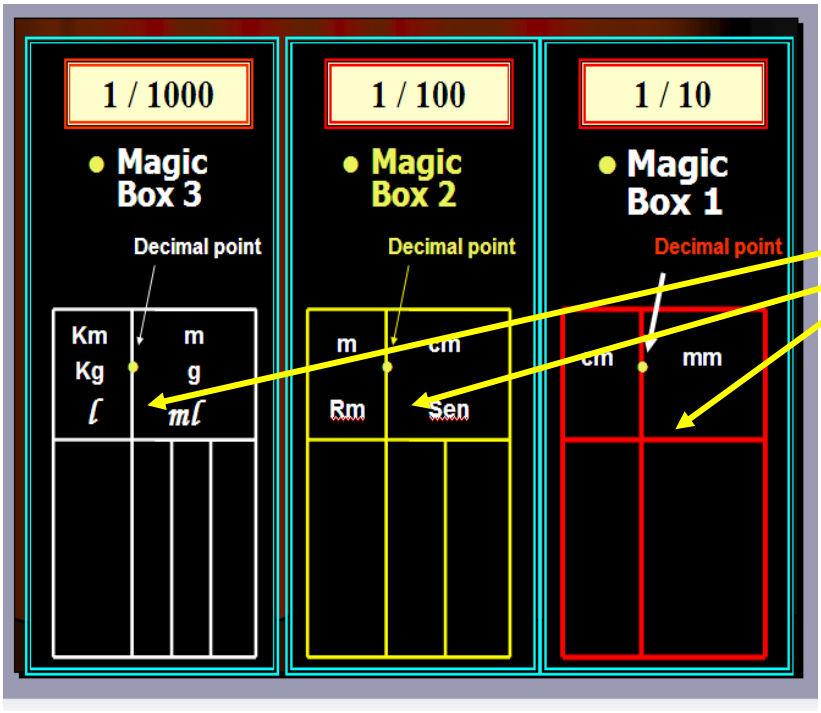


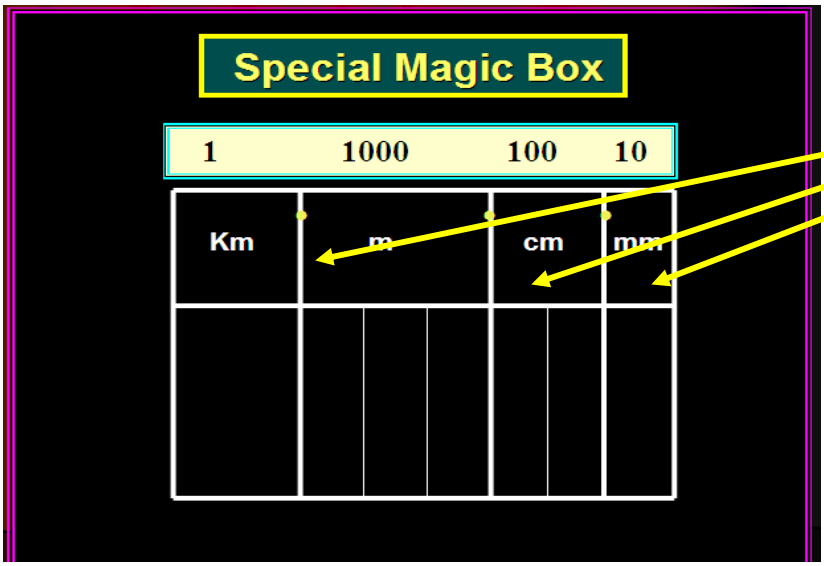


Compare the topic and unit

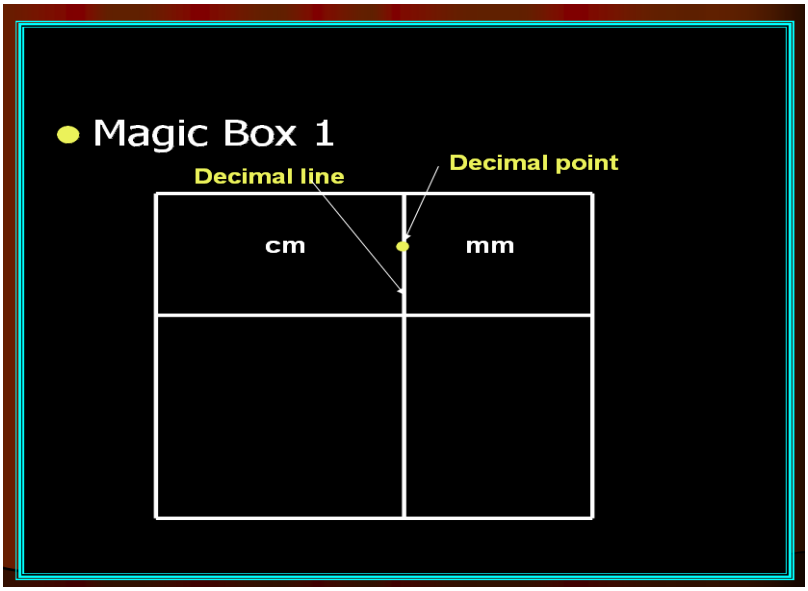


Build Magic Box

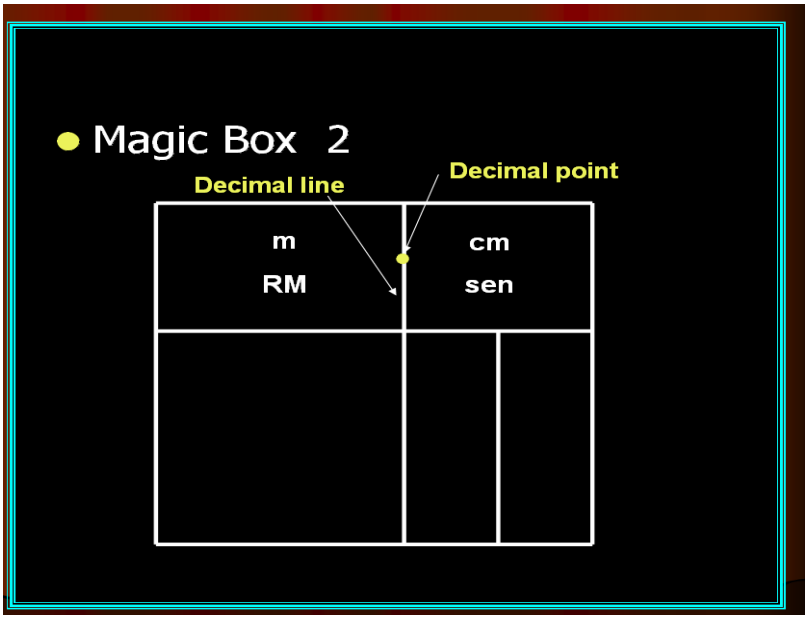




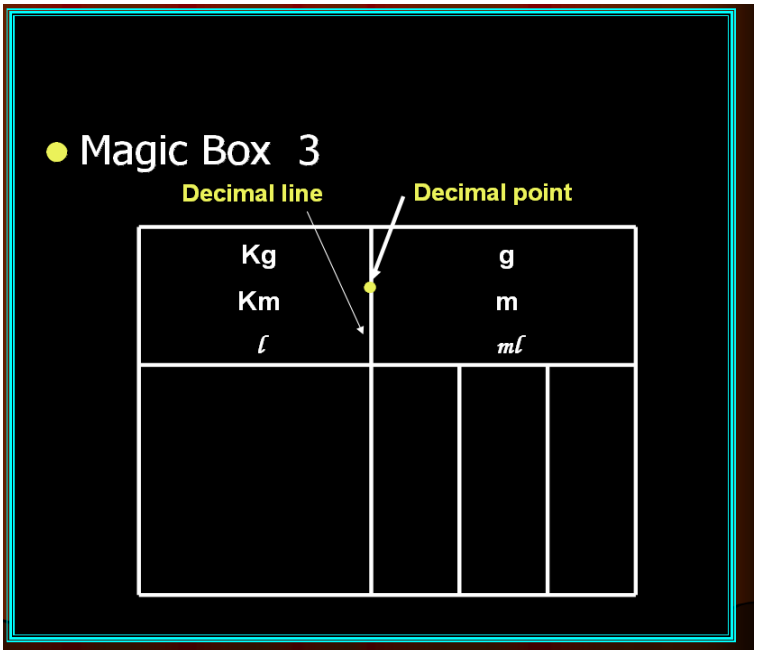
THIS IS MAGIC BOX



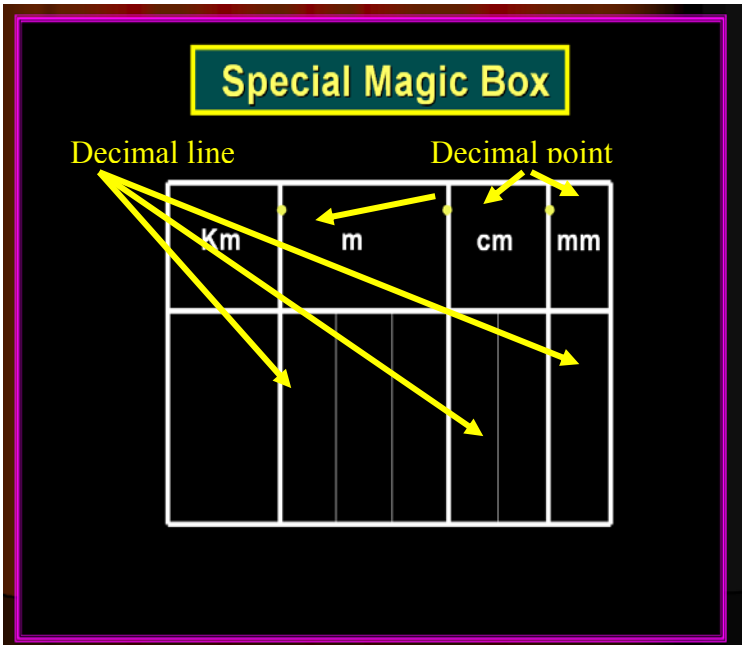
Magic Box 1 has 1 column for cm unit and 1 column for mm unit. This shows that the unit conversion is 1cm equals 10 mm. There is a decimal line in between column cm and mm.



Magic Box 2 has 1 column for units m and RM and 2 columns for units cm and sen. This shows that the unit conversion is 1m equals 100 cm or 1 RM equals 100 sen. There is also a decimal line in between column m, RM and column cm, sen.



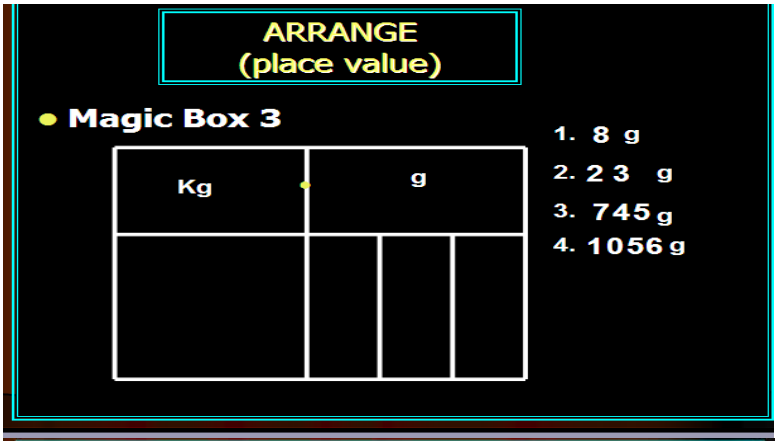
Magic Box 3 can be used to simplify the unit kg and g, *l* and *ml*, and km and m. This Magic Box has 1 column for unit kg, km and *l* and 3 columns for g, m and *ml*. This shows that the unit conversion is 1kg equals 1000 g, 1 km equals 1000 m and 1*l* equals 1000*ml*. There is also a decimal line in between column kg, km, *l* and column g, m, *ml*.

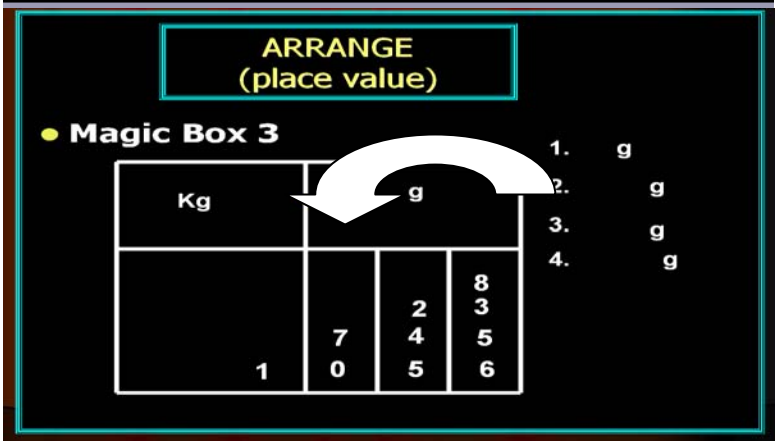


The Special Magic Box can be used to simplify the topic length in unit km, m, cm and mm. Special Magic Box has 1 column for unit km, 3 columns for unit m, 2 columns for unit cm and 1 column for unit mm. There is also a decimal line (1) in between column mm and cm, decimal line (2) in between column cm and m, decimal line (3) in between m and km. The

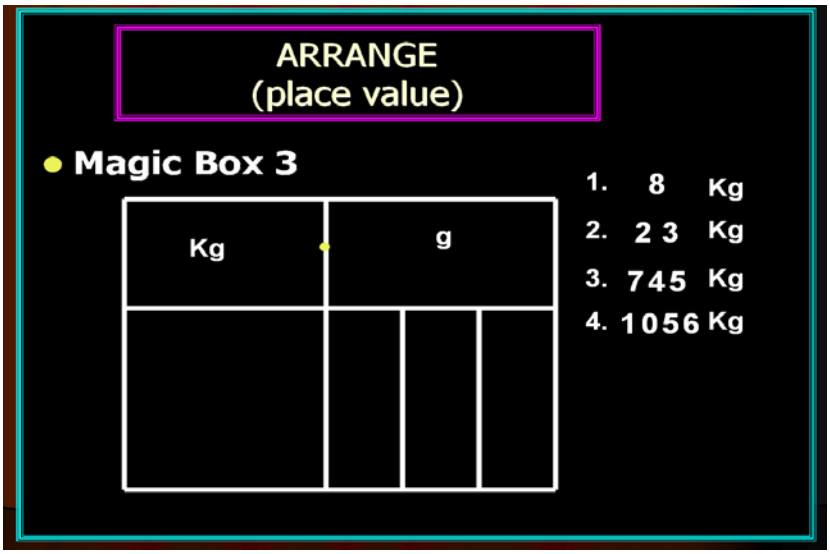
Special Magic Box is suitable to convert numbers to produce the answer in 2 different units.

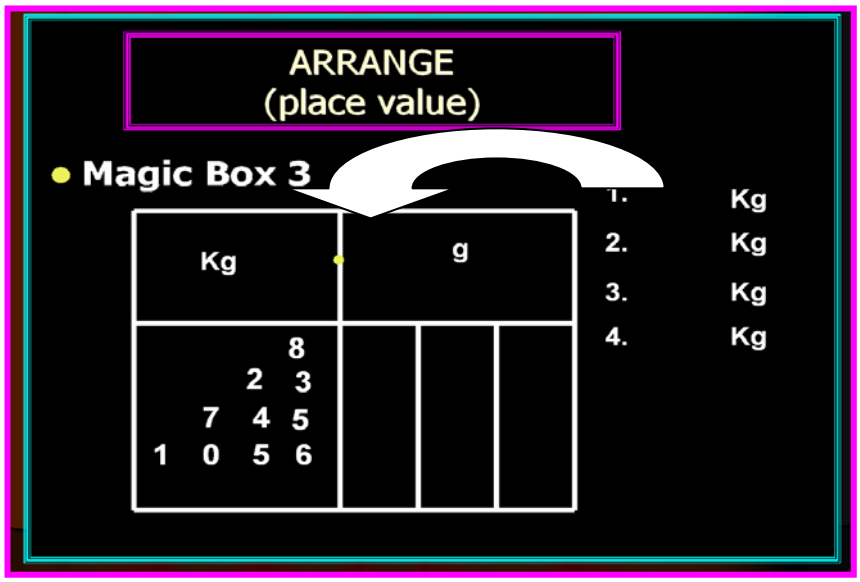
6.2 Phase 2: Arrange the Place Value



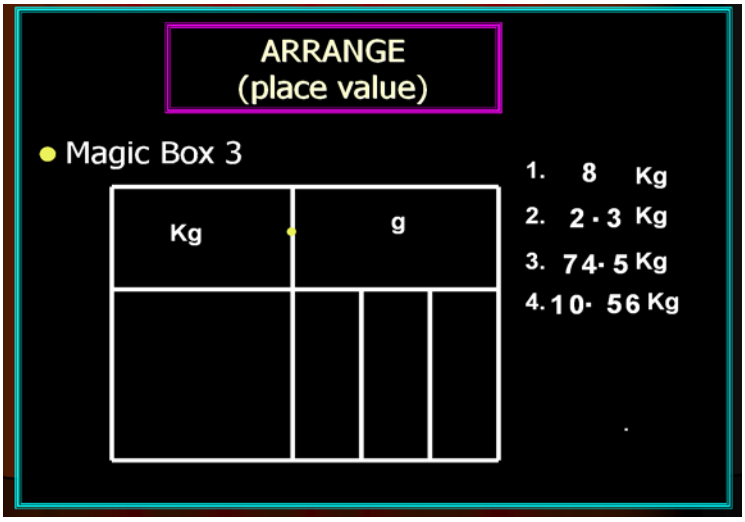


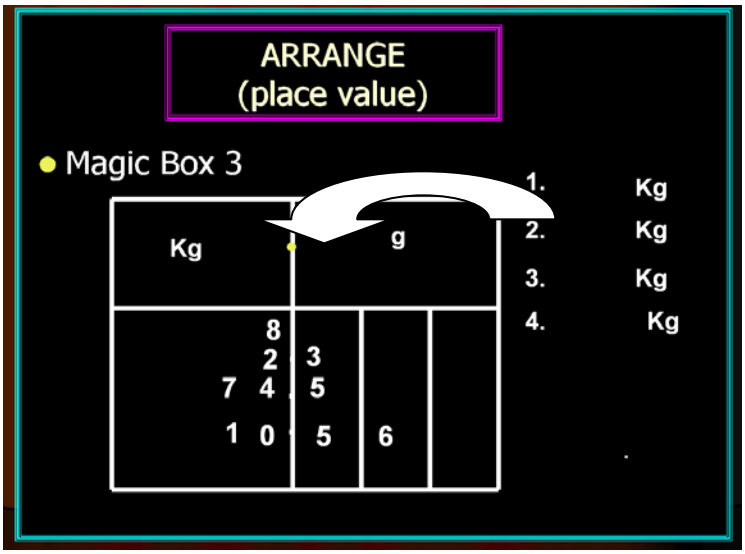
To arrange the whole numbers for unit g:
Insert the number in the third column on the right. As seen in the example, to arrange 23g, insert numbers 2 and 3 making sure to begin from the third column on the right. To arrange 745g, insert numbers 7, 4 and 5 beginning with the digit 5 into the last column on the right, followed by digits 4 and digit 7 consecutively.





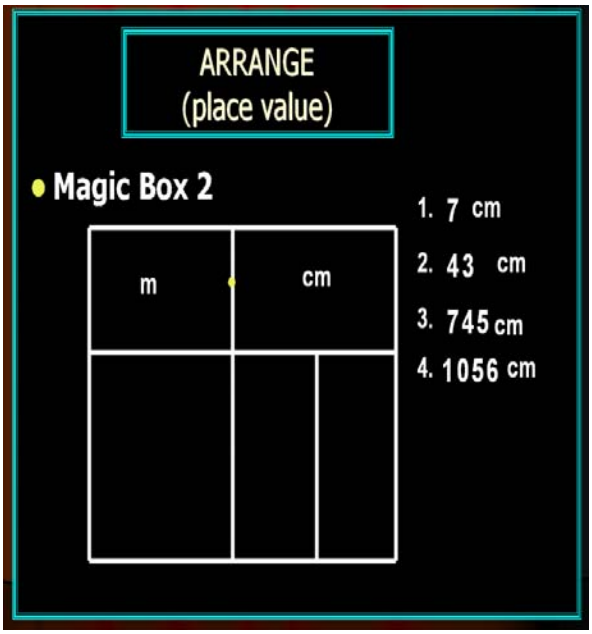
To arrange the numbers in kg:
Insert the digits in the kg column, beginning with the digit from the right to the left. For example 1056 kg, insert digit 6 followed by 5, then digit 0 and the last digit which is 1 in the kg column.

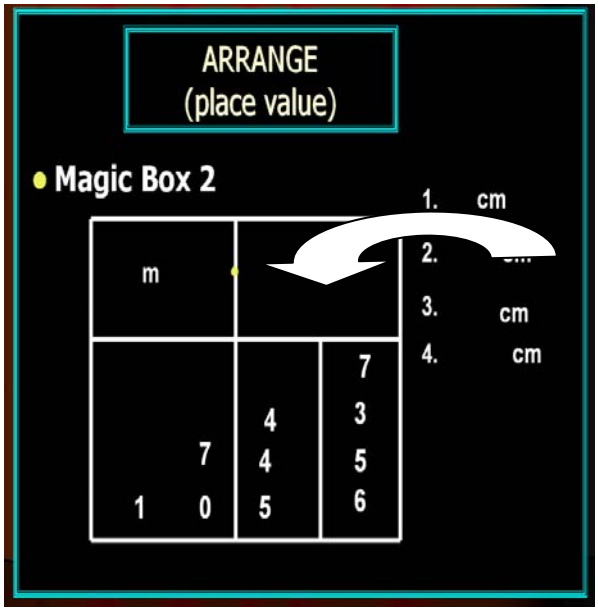


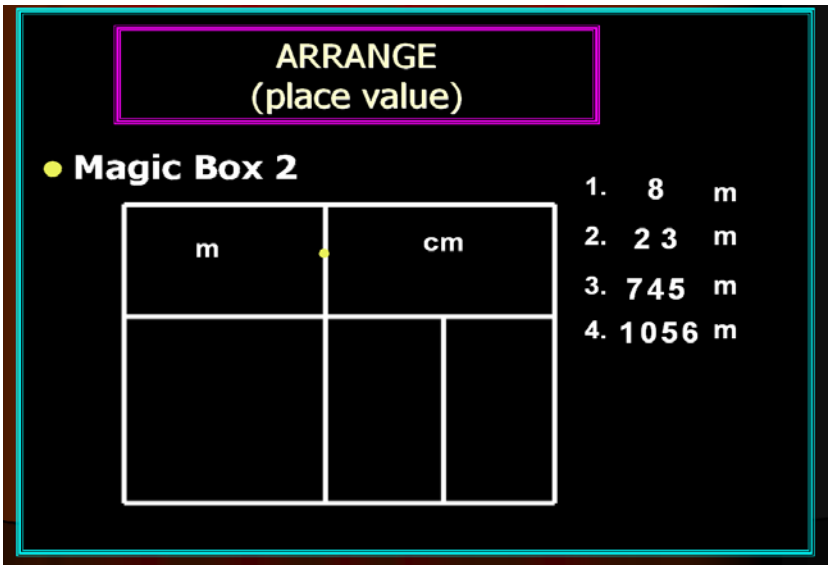


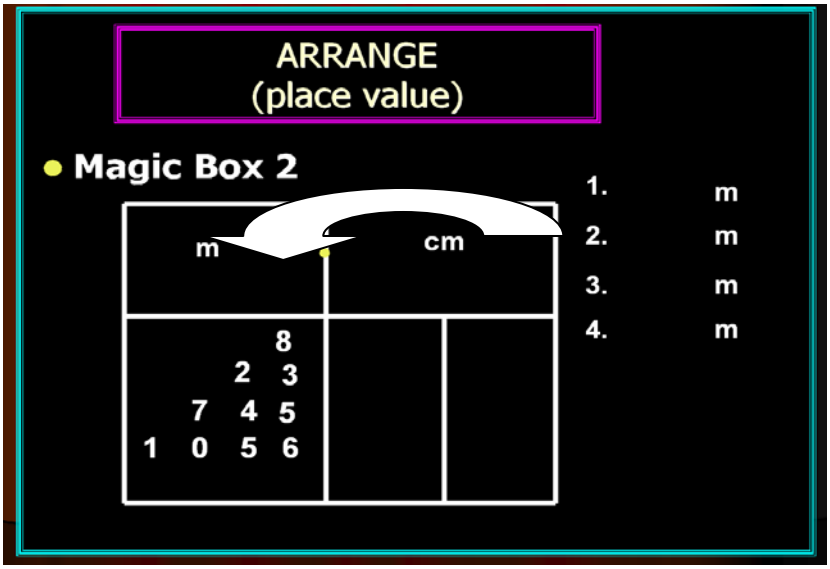
To arrange numbers with decimal point:
First, insert the decimal point on the decimal line. For example to write 2.3kg then insert the digit nearest to the decimal point, in this case digit 2. Which is the whole number in column kg whereas digit 3 which is the decimal number in the g column.

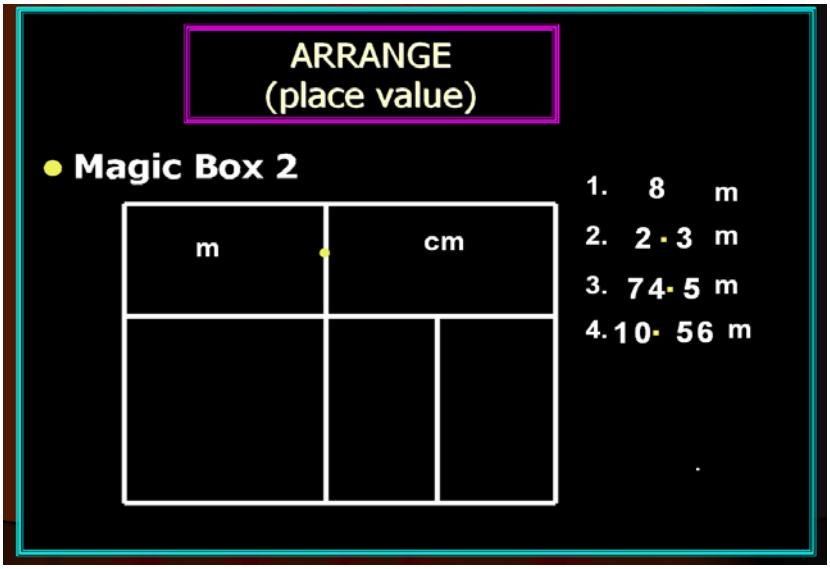
Magic Box 2 and Magic Box 1:
Rearranging the place value for unit m and cm, RM and sen is the same as arranging the place value using Magic Box 3. The differences are the units and the columns. There are only 2 columns on the right side of the box for Magic Box 2, and only 1 column on the right side of the box for Magic Box 1. Magic Box 2 can be used to simplify the units m and cm, RM and sen.

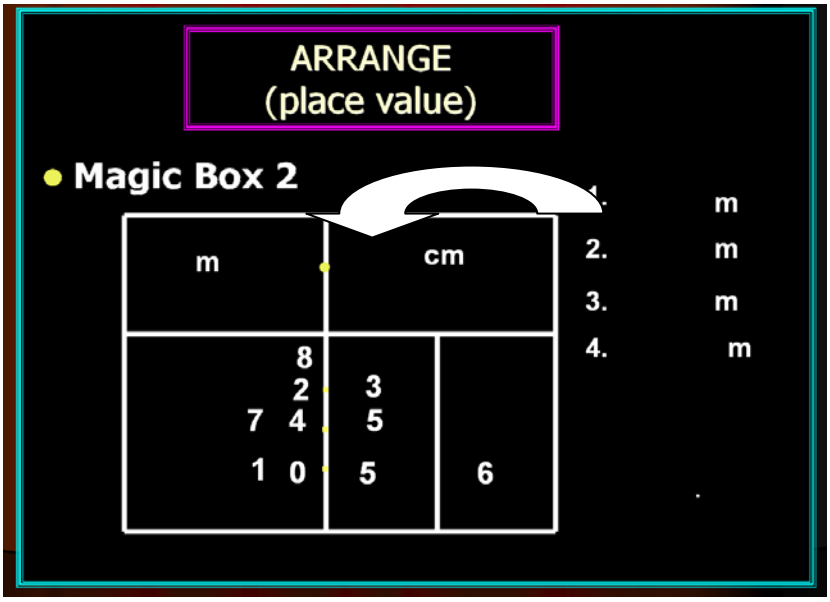




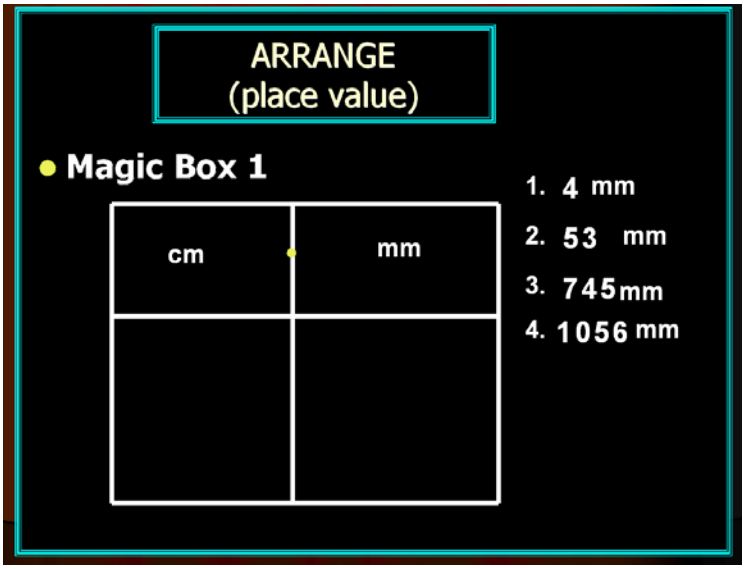


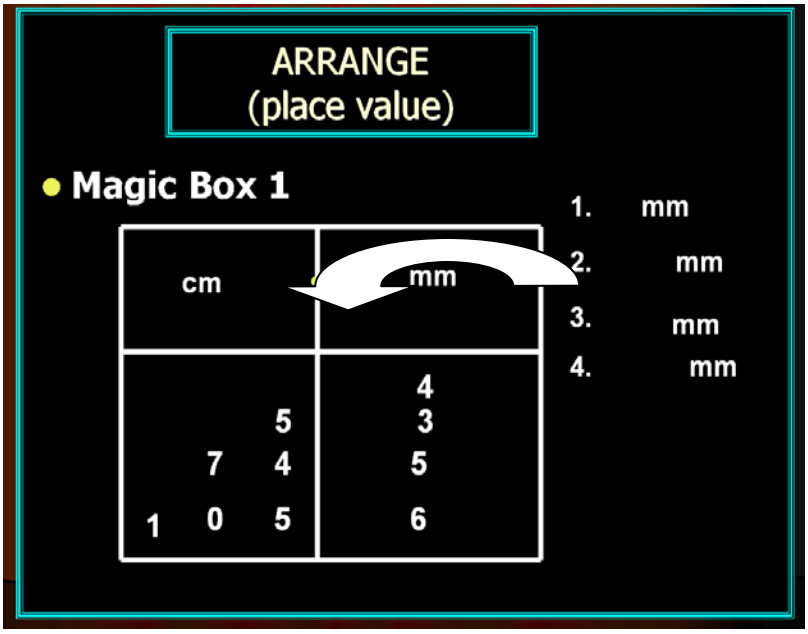

ARRANGE
(place value)
Magic Box 2
m
cm
8
2 3
7 4 5
1 0 5 6
1. m
2. m
3. m
4. m

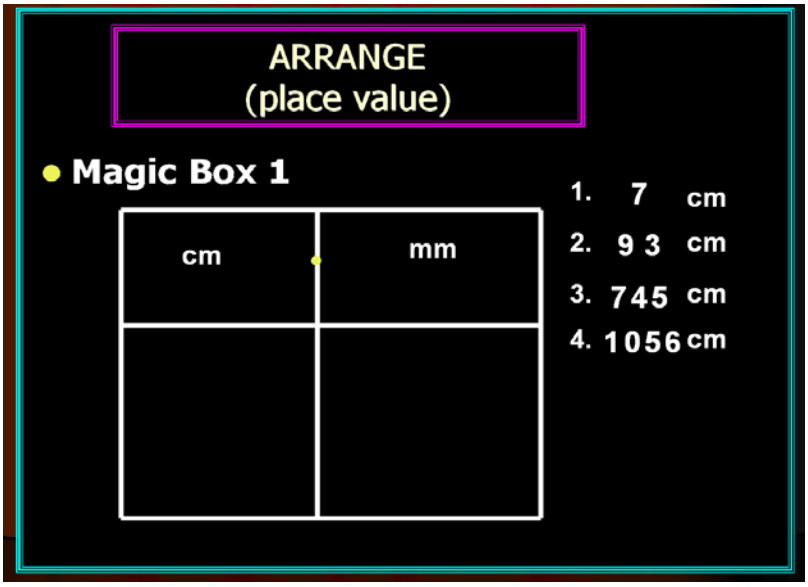

ARRANGE
(place value)
Magic Box 2
m
cm
1. 8 m
2. 2·3 m
3. 74·5 m
4. 10·56 m

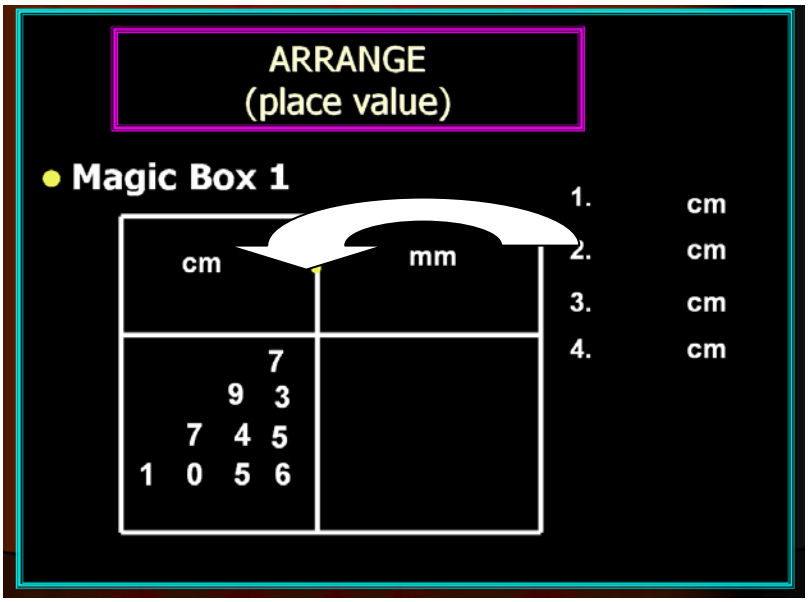


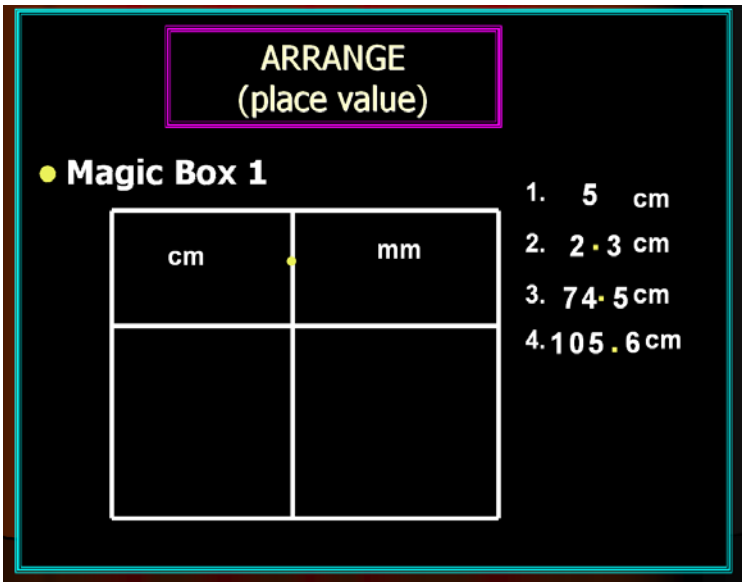
Magic box 1 can be used to simplify the units cm and mm.

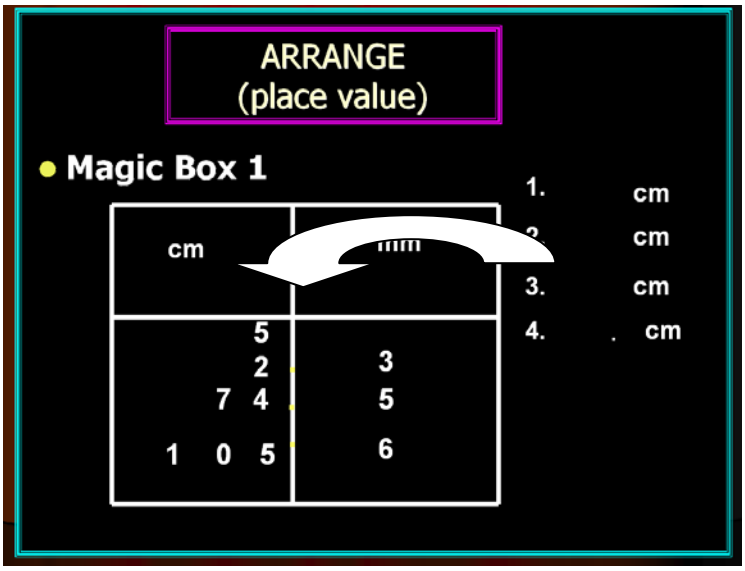



ARRANGE
(place value)
Magic Box 1
cm
mm
1. mm
2. mm
3. mm
4. mm
5
7 4
1 0 5
4
3
5
6

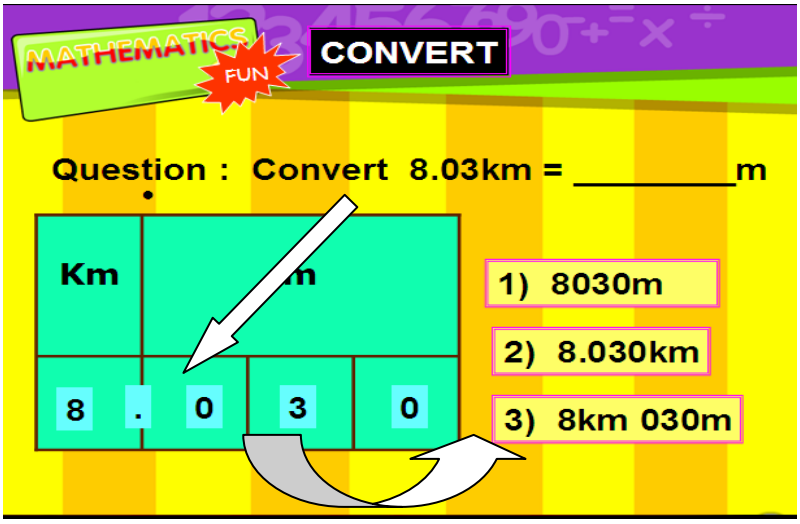

ARRANGE
(place value)
Magic Box 1
cm
mm
1. 7 cm
2. 9 3 cm
3. 7 4 5 cm
4. 1 0 5 6 cm


ARRANGE
(place value)
Magic Box 1
cm
mm
7
9 3
7 4 5
1 0 5 6
1. cm
2. cm
3. cm
4. cm


ARRANGE
(place value)
Magic Box 1
cm
mm
1. 5 cm
2. 2 · 3 cm
3. 74 · 5 cm
4. 105 . 6 cm



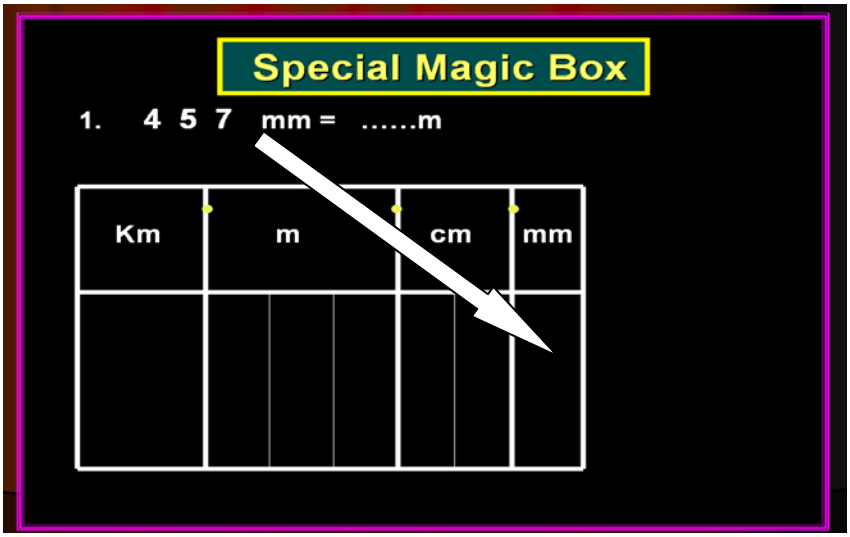
6.3 Step 3: Convert The Unit



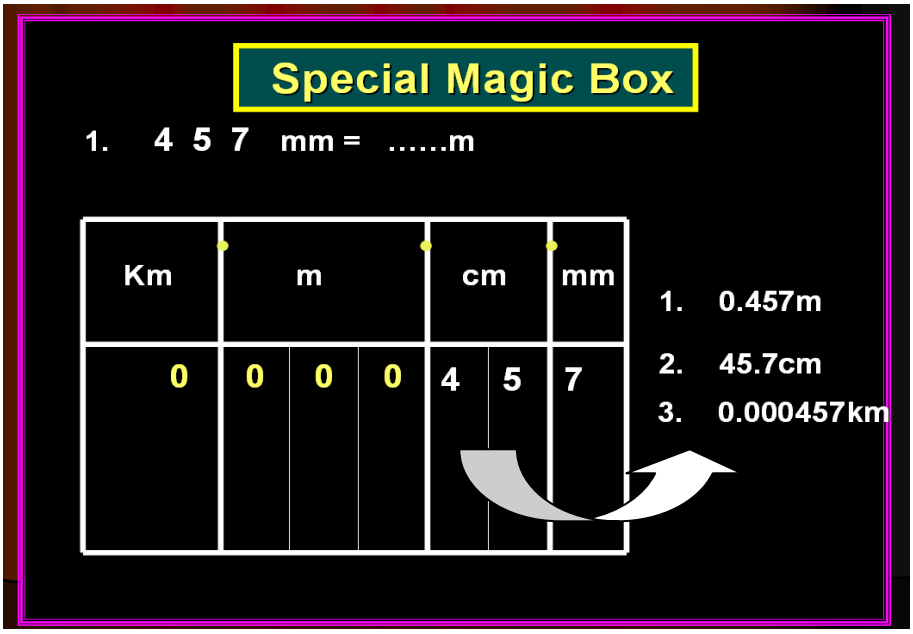
How to convert the answer into unit:

The first step is to draw the Magic Box. Make sure the box consists of only 3 squares on the right which represent (metre unit) and 1 square or more for the km unit. Then insert the question number in the box, making sure that the number after the decimal is on the right of the Magic Box and the number before the decimal points on the left. The decimal point is on the decimal line. For numbers with 2 decimal places, insert a '0' on the third column.

i. To set the answer to metre, read the whole number in the box beginning from the left and ignore the decimal point. Example. 8030m



ARRANGE PLACE VALUE



Convert 457mm to m using special magic box:
First, insert digit 7 in column mm followed by digit 5, and digit 4. In columns m and km, just insert digit 0 as there is no digit.

Once the step is carried out, students can read and write the answer and or convert it in cm and also km.

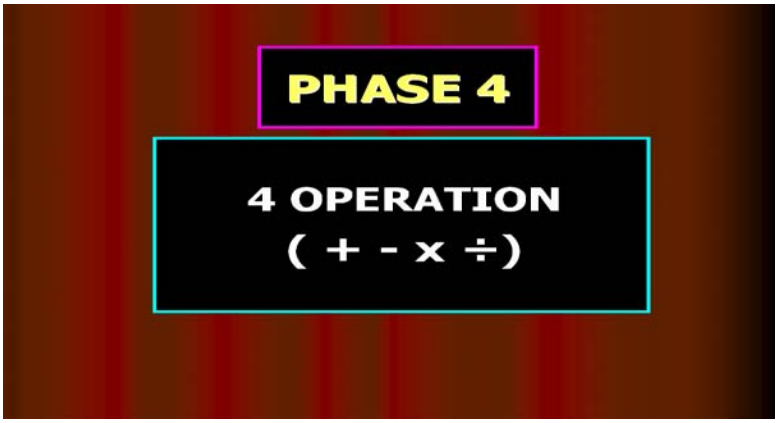
To get the answer in unit km, copy all the numbers shown in the Magic Box. Insert the decimal point between unit km and unit m. Read the number beginning from the right side of the decimal line.

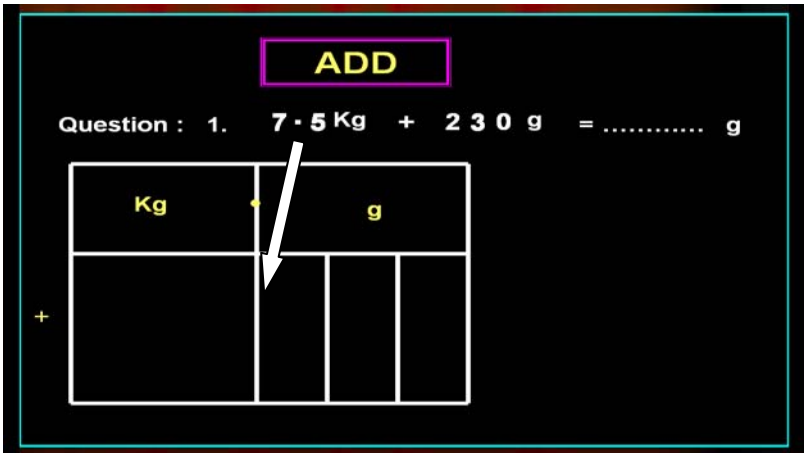
To get the second answer in cm, copy all the number in the Magic Box and insert the decimal point between the cm unit and mm unit. To read the number in cm, read the digits beginning from the left after the decimal line.

To read the answer in m, copy all the numbers shown in the Magic Box. Insert the decimal point between m unit and cm unit. To read the number in m, read the digits from the left side after the decimal line.

Special magic box is suitable to convert numbers to get the answer in 2 different units.

6.4 Phase 4: Four Operation





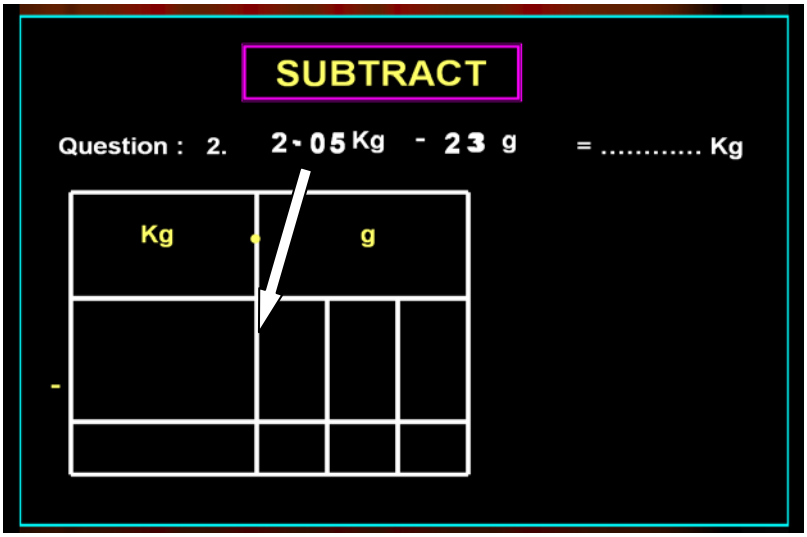
ARRANGE PLACE VALUE

Addition using the Magic Box 3:
Insert the numbers as explained earlier. Then add the numbers to get the answer. Students can get 3 answers by converting the numbers into g and kg

To get the answer in g, copy all the numbers upon addition and read the numbers on the right of g. By ignoring the decimal line and the decimal point, you will get 7730g.

To get the second answer in kg, copy all the numbers upon addition and read the number nearest to the decimal line on the left and the number nearest to the decimal line on the right but do not ignore the decimal point, so you will get 7.730kg.

To get the third answer in kg and g, copy all the numbers in the kg column (kg unit) and also the numbers in right column (g unit), but ignore the decimal point, you will get 7kg 730g.



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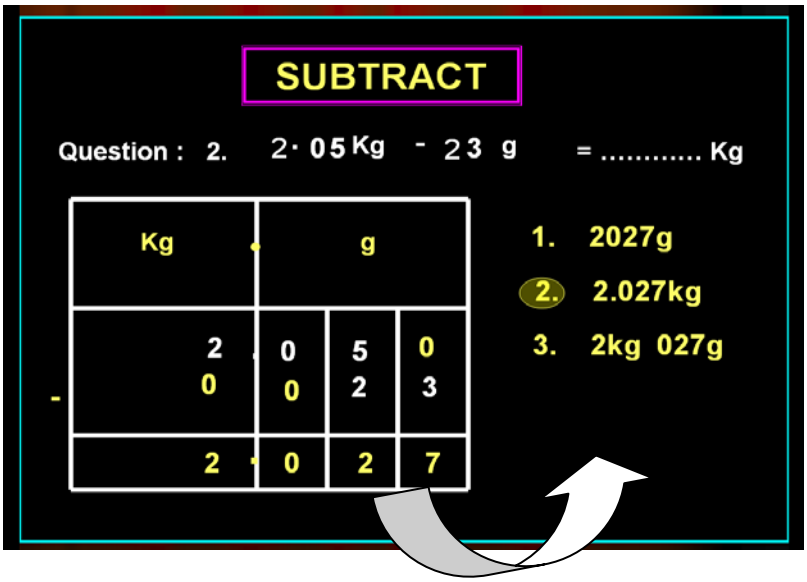

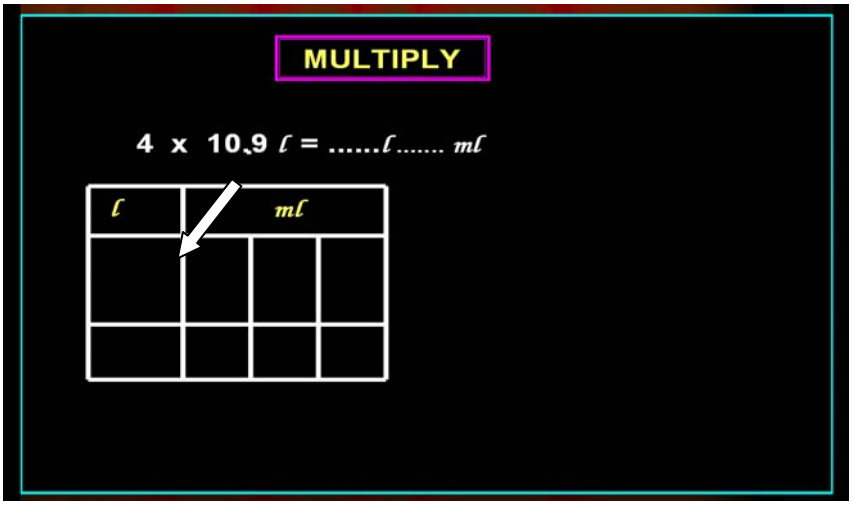

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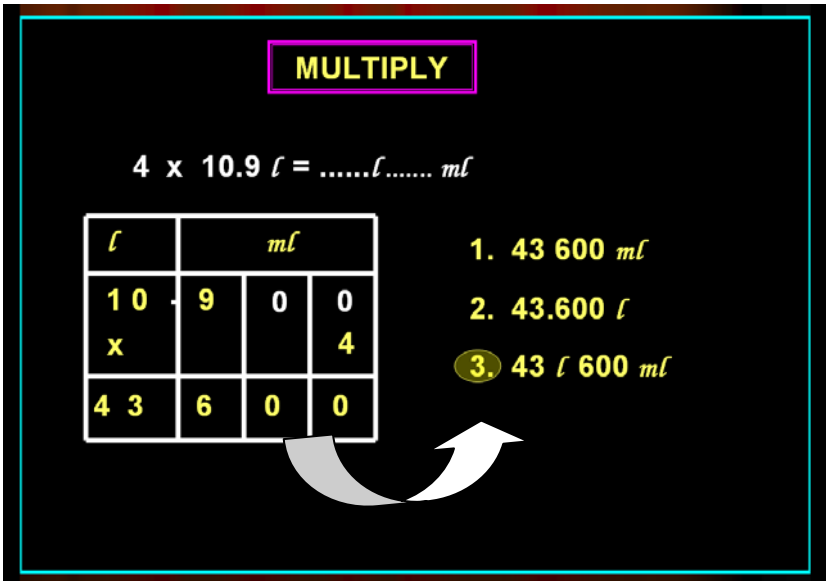

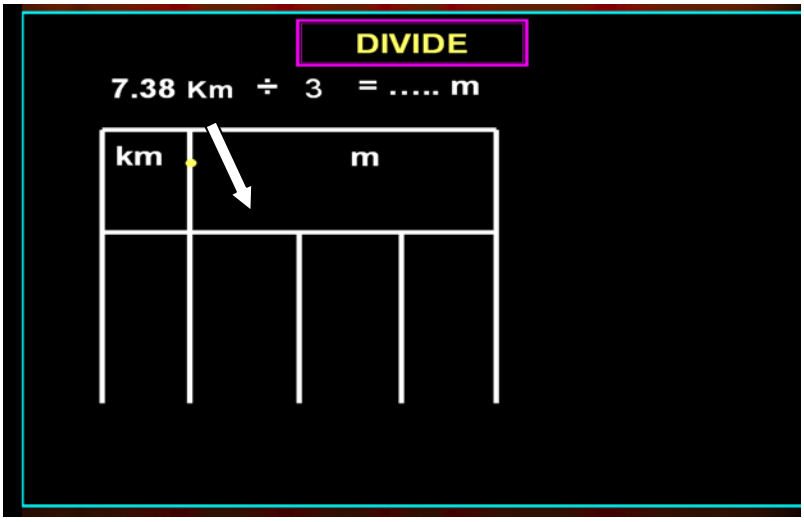

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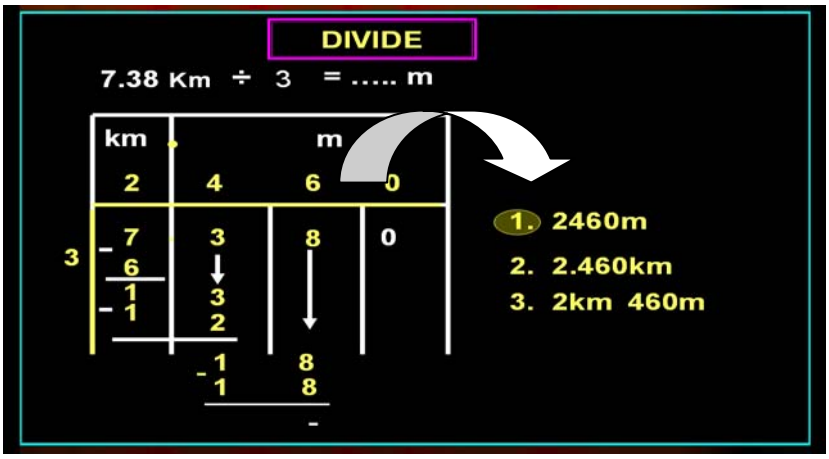
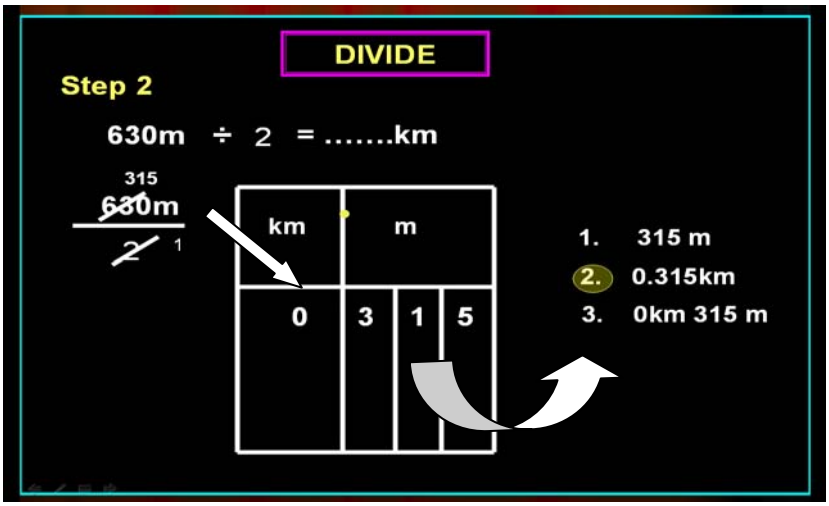
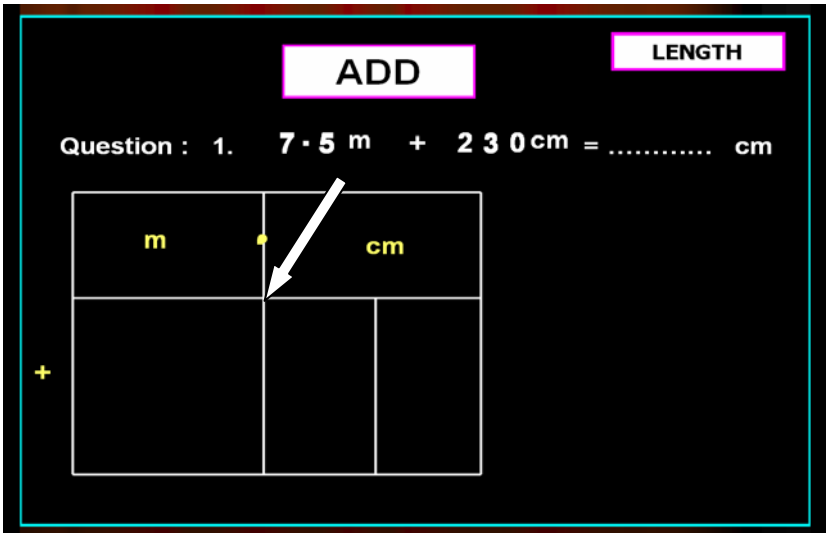




Summary

For subtraction, multiplication and division, students need to subtract, multiply and divide in the magic box. However to yield the answer into the required unit, the student needs to read the number in the Magic Box as explained earlier, using the conversion g units.

The steps using Magic Box 2 and Magic Box 1, which involve 4 operations, are the same as the steps used in Magic Box 3. The differences are the columns and the units.



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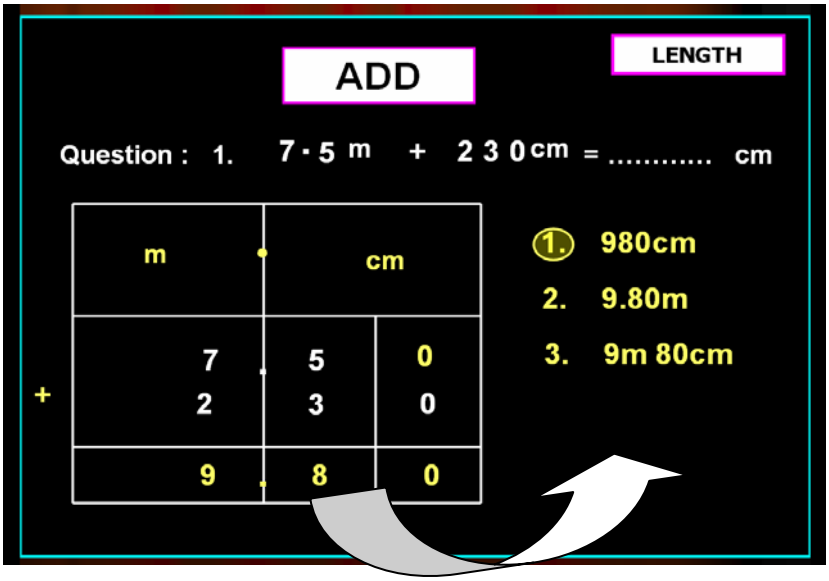

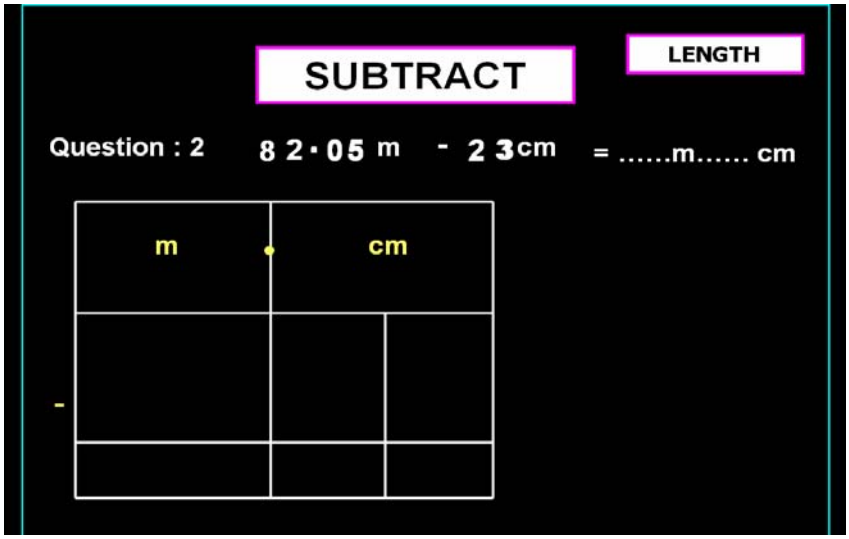

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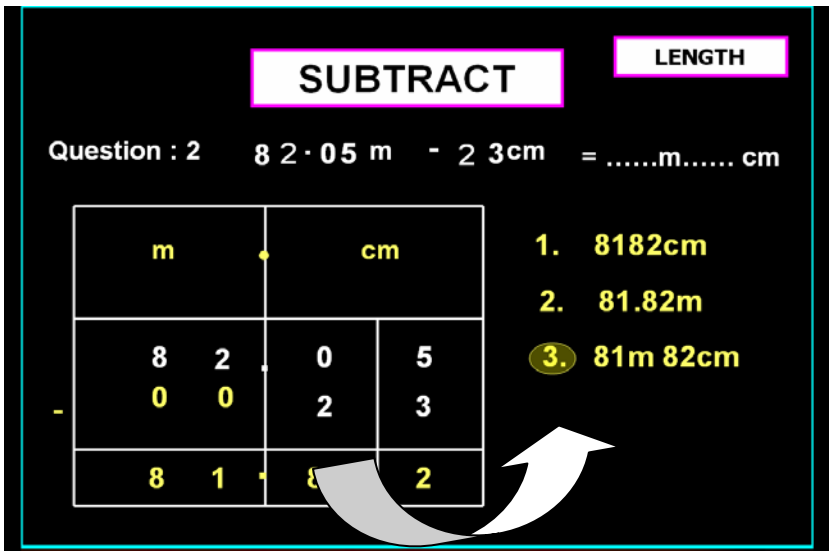

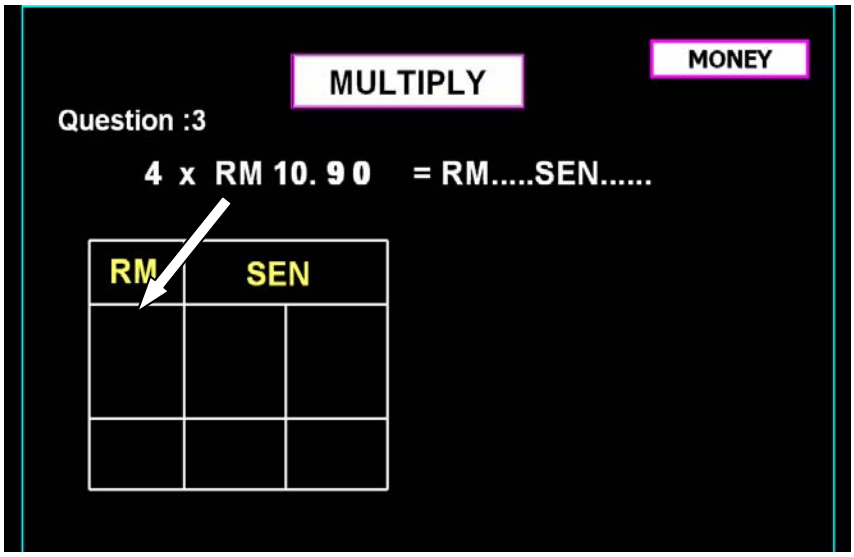

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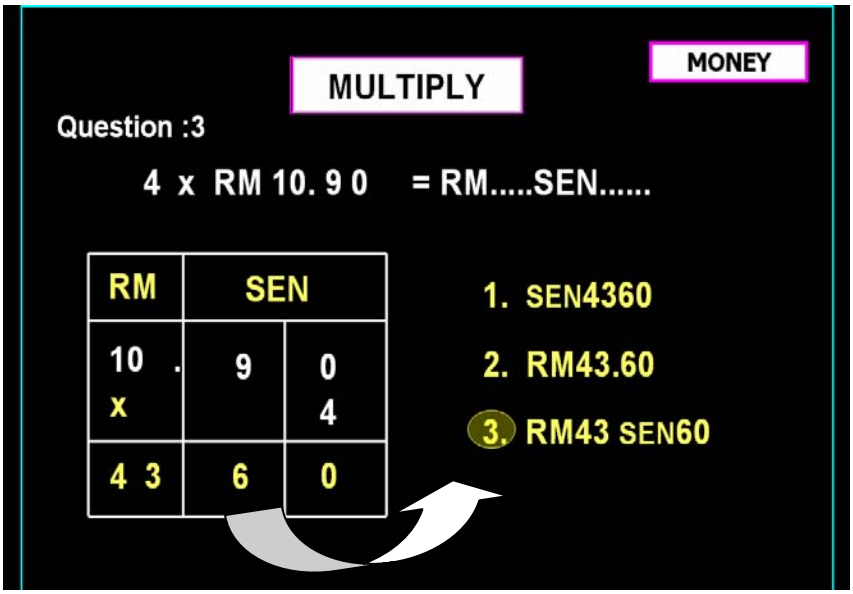

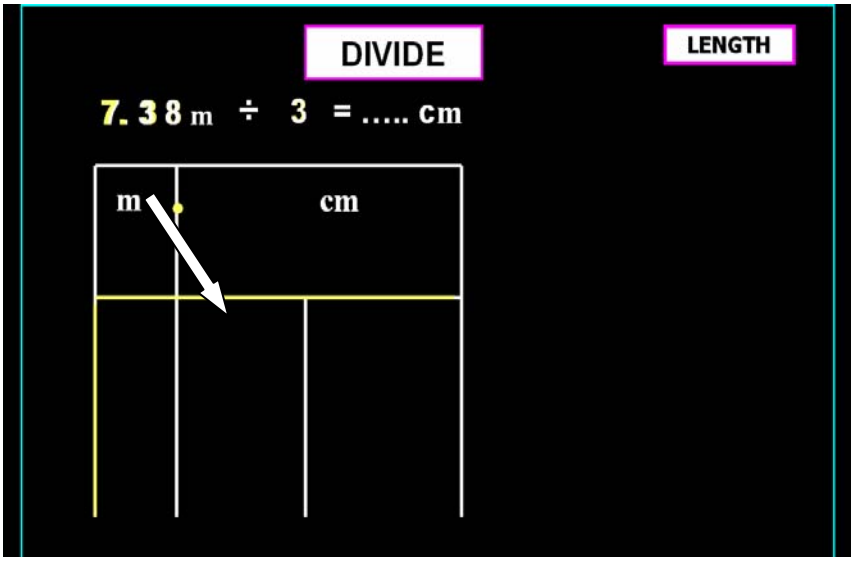

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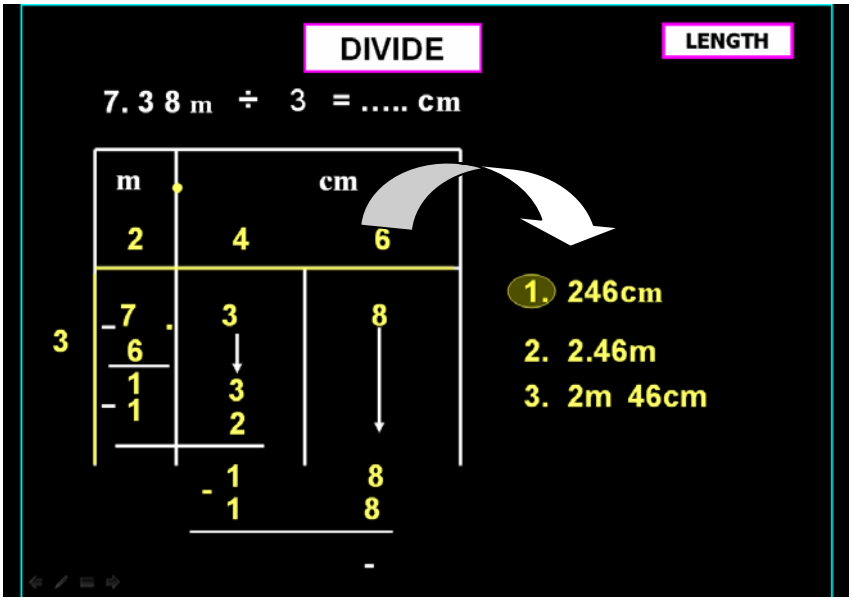
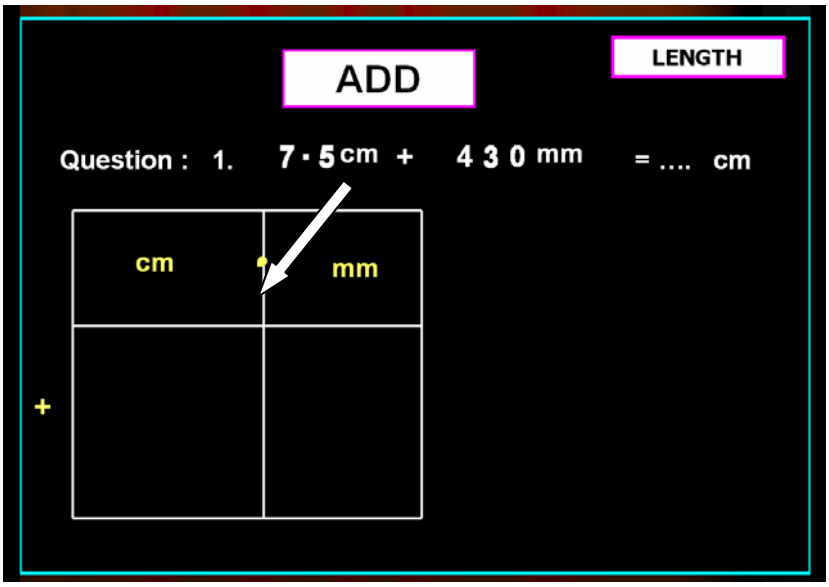


USING MAGIC BOX 1



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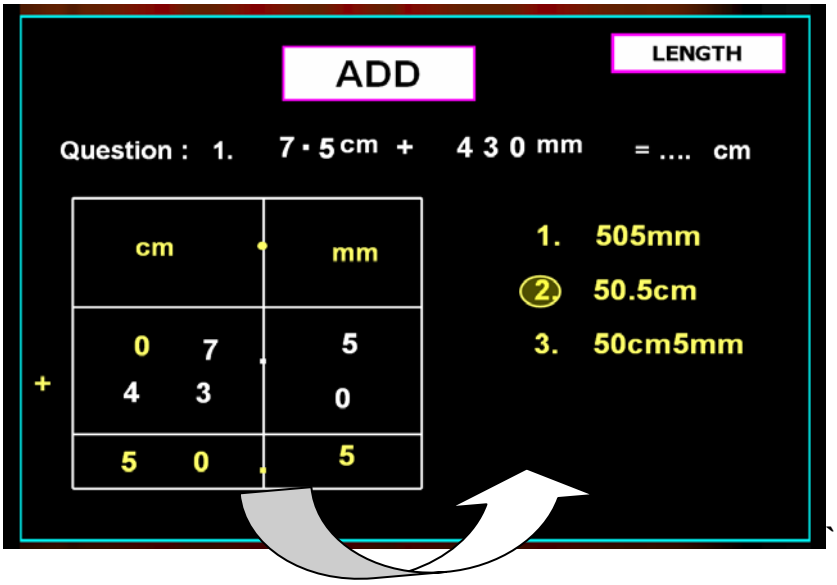

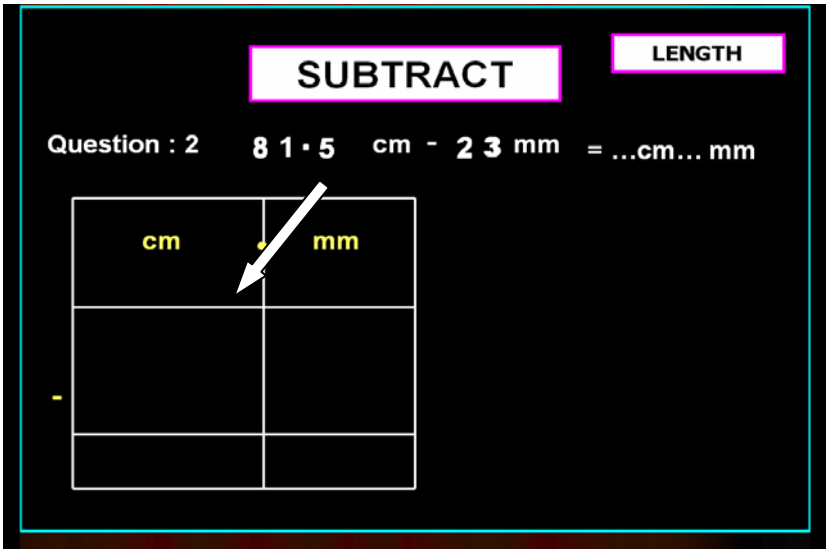

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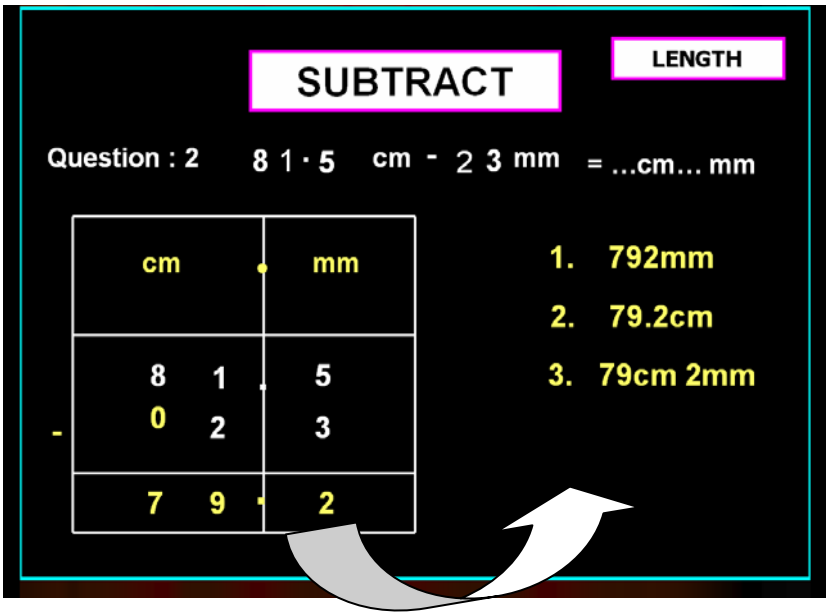

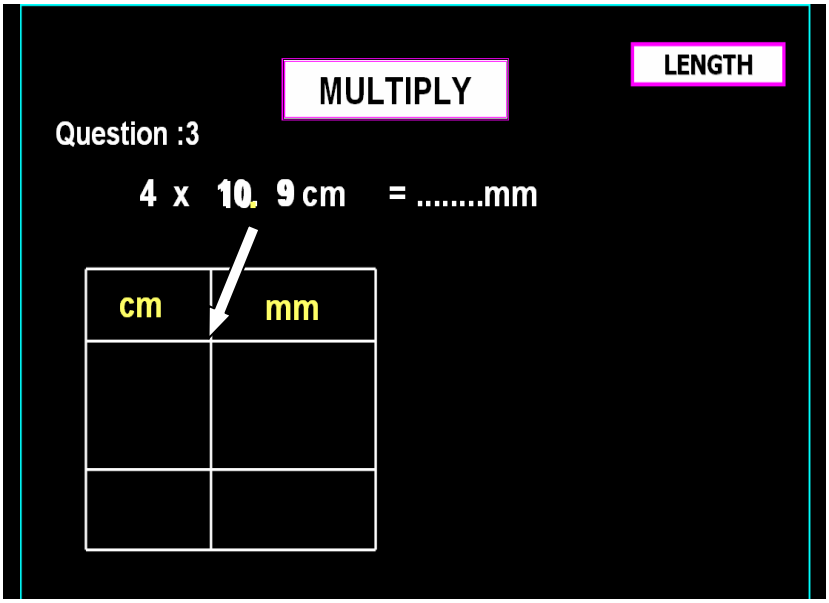

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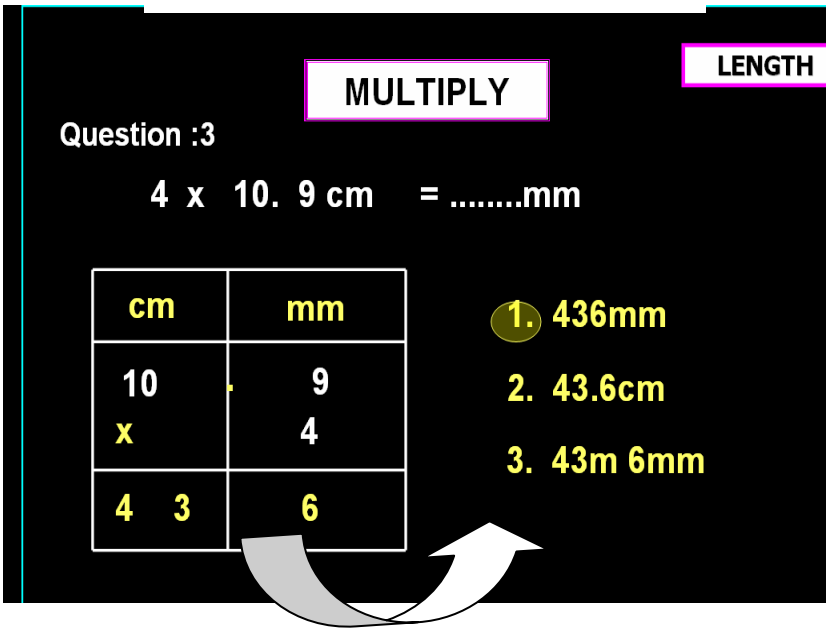

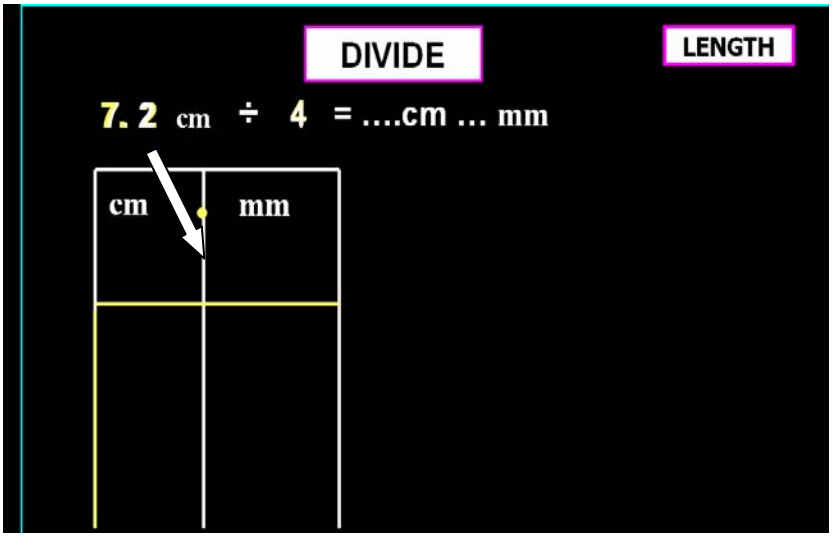

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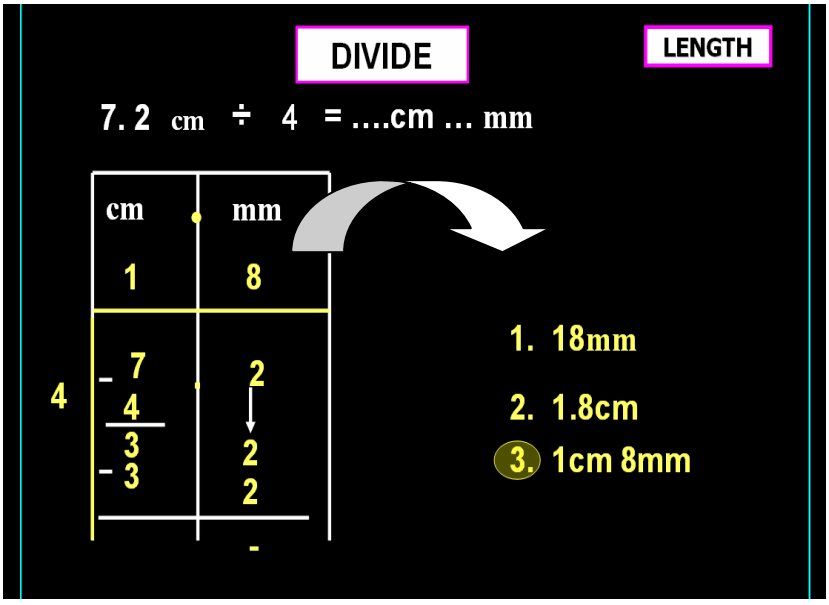
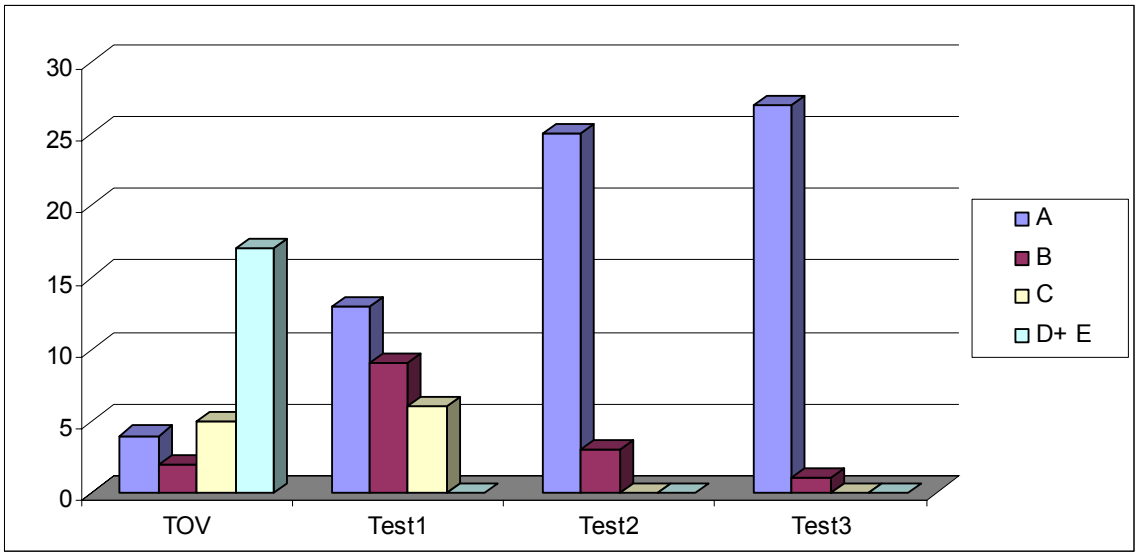


7.0 RESULTS ANALYSIS

Table 3: Students Achievement Using The 'Magic Box'

NO	ITEM	STUDENT	MAGIC BOX						MSMP		D+E	
			A		B		C		A+B+C			
			Bil.	%	Bil.	%	Bil.	%	Bil.	%	Bil.	%
1	TOV	28	4	14.29	2	35.00	5	17.86	11	39.29	17	60.71
2	TEST 1	28	13	46.42	9	32.14	6	21.42	28	100		0.00
3	TEST 2	28	25	89.29	3	10.71		0.00	28	100		0.00
4	TEST 3	28	27	96.43	1	3.57		0.00	28	100		0.00

8.0 ACHIEVEMENT GRAPH



9.0 REFLECTION

Upon identifying student's weaknesses, a pre-test was conducted to obtain students *take-off value* (TOV) for the topic tested. Student's marks were recorded for reference.

Then, the first phase was conducted. First, students were introduced to the Magic Box. The session continued with teaching the students to draw the Magic Box in the precise manner.

In the second phase, students were taught how to arrange the values in their respective places. This activity was conducted in groups as well as individuals in order to instil the spirit of cooperation among them. At this stage, a few sets of questions were prepared to enhance students' skills.

In the third phase, students were stressed on the conversion of units. The students were clearly taught on how the Magic Box is used to solve problems involving unit conversion. As a result, they were able to answer the given questions with flying colours.

In the fourth and final stage, questions which involved the four different operations were emphasised to the students.

In the end, students have shown positive improvements to sets of selected questions given to them. In addition, the final result showed that all the students were able to pass the tests and 90% of them are getting ‘A’s.

A Study on the Learning Achievement of Grade 12 Students in Scientific Studies through Experiments: Young Soil Scientists

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Supanburi Province, Thailand

Abstract

The purpose of this classroom action research is to study science learning achievement of Grade 12 students who had been taught by the experiment-oriented learning activity called Young Soil Scientists. In the first semester of academic year 2006, a representative sample of 23 students from a Grade 12 classroom of Thungfakepittayakom School was selected. This classroom was in science-mathematics study program. The science learning achievement test with 0.80 reliability coefficient (r) was constructed and used as the researching tool in this study. This research was conducted based on one group pre-test and post-test research design. Data of students' science learning achievement were statistically analyzed by t-test dependent distribution. Result of this research was found that Grade 12 students taught by Young Soil Scientists, the experiment-oriented learning activity gained the post-test scores of science higher than that of the pre-test with level of significance 0.01.

Introduction

Chemistry is one of the science subjects that can be divided into variety of learning units and promotes the students' scientific literacy according to Thai National Educational Act, 1999. Scientific literacy is one of the factors which helps improve the achievement of the national development through science and technology. However, science learning achievement of Thai students has not yet met the certain level of expectations due to the lack of learning quality. It was found that Thungfakepittayakom School also faced the problem of the students' low achievement test scores in the subject of Chemistry.

One major aspect of the problem in learning science is the lack of students' skill of how to relate scientific knowledge from their classroom to the real-world situations. In addition, learning science by means of rote has ended in failure because students never have or gain scientific process skills. This results in students lacking skills of knowledge inquiry, without the interest in learning science, and gaining low science achievement test scores.

The above assumption is derived from series of classroom interviews conducted by the researcher as a teacher who directly interacted with students. In chemistry class, the students cannot find the importance of science to society. Students could not connect the knowledge and the application of Acid-Base to their everyday life.

One of the courses to solve this problem, the teacher as a researcher thought that it simply relies on learning chemistry through real-life experience. In order to make this experiment possible, the researcher surveyed area around Samchuk District for any type of local activities that would probably be related to a chemistry classroom. After a few days of

searching, the Soil Specialists (Pedologists or [หมอดิน]) Project, held by the Land Development Department, was discovered. The project activity was voluntary and its purpose was the improvement of soil condition suitable for growing crops.

A group of local people participating in Soil Specialists (Pedologists) Project had to collect samples of soil in the field as raw data prior to the study. Then, samples of soil were handed for laboratory tests. The project members applied the concept in chemistry about acid-base content to improving the soil condition. Analogous with the classroom activity, student could learn from the real-life activity and apply to what they learn in class. They could become more interested in learning chemistry, and gain the learning process as well as their learning achievement. With the experiment, the students in the group study had called themselves "Young Soil Scientists". The learning activity invented by applying this Soil Specialists (Pedologists) Project activity to chemistry classroom is so called "Young Soil Scientists Experiment Exercise".

Research Objectives

The purpose of this classroom action research is to study science learning achievement of Grade 12 students who had been taught by the Young Soil Scientists Experiment Exercise learning activity.

Research Hypothesis

It is hypothesized that the science achievement test scores of students after study through the Young Soil Scientists Experiment Exercise learning activity are higher than that of before study.

Research Methodology

Population

Population of this research is Grade 12 students who were studying in the first semester of academic year 2006 of Thungfakepittayakom School, Samchuck District, Supanburi Province, Thailand.

Sample

Researcher purposefully selected students from science-mathematics study program. The representative sample is 23 students of a Grade 12 classroom who were studying in the first semester of academic year 2006.

Variables

Independent variable: Science instruction by using the Young Soil Scientists Experiment Exercise learning activity.
Dependent variable: Students' science achievement test scores.

Research Instruments

The experimental treatment used with the student samples was the Young Soil Scientists Experiment Exercise learning activity invented by the researcher. This learning activity is a set of learning units for Acid-Base topic. It took 16 learning periods. Purpose of this learning unit is to develop the students' conceptions of Acid-Base theory; Acid-Base reaction; Buffer solution; Acid-Base titration and pH indicator through the learning context relevant to real-life situations, the Young Soil Scientists Project. In this learning activity, students are learning about Acid-Base topic by acting as "Young Soil Scientists" who have responsibilities in collecting samples of soil in their villages and taking laboratory tests of soil. This activity will develop students' scientific concepts of Acid-Base and scientific process skills.

The science achievement test used for collecting pre-test and post-test scores was constructed in the form of multiple choices. This test had been tried out with non-sample group of students and it gained the question difficulty statistic (p-value) 0.33-0.78 with reliability coefficient (r) 0.80.

Data Collection

This research is classroom action research which is conducted based on one group pre-test--post-test research design. It is diagrammed as follows:

$$RE \quad T_1 \quad X \quad T_2$$

RE refers to experimental group of students who were purposeful sampling. T_1 indicates pre-test and T_2 indicates post-test by using science achievement test. X is the symbols of the experimental treatments, the instruction by using the Young Soil Scientists Experiment Exercise learning activity.

The procedures of data collection are as follows:

1. The researcher as a science teacher purposeful sampled Grade 12 students who took science-mathematics program. The number of students in a classroom was 23 students.
2. Sample group of students were given direction about how to study by using this experimental instruction.
3. Sample group of students had taken a pre-test, the science achievement test.
4. The researcher as a science teacher taught the sample group of students himself using the Young Soil Scientists Experiment Exercise learning activity for 16 periods.
5. After finishing the learning activity, sample group of students were given a post-test, the science achievement test.

Data Analysis

The pre-test and post-test scores of the sample students' science learning achievement were collected and analyzed by using statistical analysis procedure and computer analysis of data.

The mean scores of pre-test and post-test were calculated and compared with t-test dependent distribution for testing research hypothesis.

Result and Discussion

The result of statistical comparing pre-test and post-test scores of the sample students' science learning achievement is shown in the table.

Table: Comparison of pre-test and post-test scores of the students' science learning achievement studied through the Young Soil Scientists Experiment Exercise learning activity.

Test	n	k	$\bar{x}$	SD	t
Pre-test	23	60	28.30	7.13	
					15.00**
Post-test	23	60	44.96	5.94	

$t_{(.01:df22)} = 2.50$

n	refers to number of students in the sample group
$\bar{x}$	refers to mean scores
SD	refers to standard deviation
k	refers to total scores of achievement test
t	refers to t-distribution
**	refers to level of significance 0.01

From the table, it was found that in the previous study the mean score of students' science learning achievement was 28.30 with standard deviation 7.13; however, after the process of Young Soil Scientists Experiment Exercise learning activity, the mean score of students' science learning achievement was 44.96 with standard deviation 5.94.

The result from the statistic comparison of pre-test and post-test scores of the students' science learning achievement indicated that the students' science learning achievement after studying through the Young Soil Scientists Experiment Exercise learning activity was higher than that of the previous study with level of significance .01. The standard deviation values which dropped from 7.13 to 5.94 indicated that the difference among students' achievement scores decreased. That means every student gained more identical achievement scores.

The result could be concluded that the learning achievement of students has increased according to statistical t-test with level of significant 0.01 after having participated in the Young Soil Scientists Experiment Exercise learning activity. Thus, the hypothesis of this research is accepted.

The result of this research has significantly shown the improvement of student's learning achievement, which satisfies the hypothesis prior to the Young Soil Scientists Experiment Exercise learning activity. A few discussions about the result are listed as follows:

1. Teaching model by applying a principle of Young Soil Scientists Experiment Exercise learning activity to a science classroom is considered an innovative method of teaching that mainly emphasizes the students' needs. Students have opportunities to learn science through hands-on experimental activity, which help stimulate their

learning enthusiasm. The learning situations could enhance the development of students' subject knowledge. As the result, students' learning achievement increases, according to the claims by Buppachart (Bupparchart Thanhikorn 1995: 31) and Smith (Smith 1976: 12). Smith's claim states that teaching cannot be successful if the teaching approach does not match the students' skills and learning preferences.

2. The Young Soil Scientists Experiment Exercise learning activity becomes a great attraction to students. From the observation of the student behavior during the experiment, students paid close attention to the experimental procedures with great interest. Since the Young Soil Scientists Experiment Exercise learning activity provides the students real-life learning experience and a direct impact on learning, it can be related to Sathaporn's claim (Sathaporn Sathukarn 1997: 109-119). Any immediate feedback should be able to reinforce the subject content understanding; therefore, this leads to effective learning. Likewise, the Young Soil Scientists Experiment Exercise learning activity is considered as a type of learning media that offers real-life application and alternative. Moreover, the activity will respond to various forms of experimental learning activity, bringing about an enjoyable and interesting learning atmosphere (Panlop Piriyasurawong 1999 : 14).
3. The activity allows students to get actively involved in learning scientific content, specifically during the field and laboratory experiments. Students perform each step of the activity on their own, and the result is challenging and empirical. Utai Dulyakasem (2000:44-48) claims that students themselves should run the learning procedure and method in order to well create the learning condition. In addition, teachers should make an enjoyable and pressure-free learning environment available to students. Learning cannot ever base on anxiety and force.
4. Each sub-activity in the Young Soil Scientists Experiment Exercise learning activity informs its purpose at the beginning so that students do know and understand each goal clearly. As the result, the understanding of subject content takes place, and the learning process becomes effective. Working exercise is given at the end of each session to examine the students' understanding. If any misunderstanding should occur in each session, students can always review the particular step with the help of supplementary subject materials. Students have the opportunity to investigate, review and give feedback on what they have learned by working through the exercises. Hence, they are able to correct their own fallacy and error. This technique coincides with Supoj's claim (Supoj Mongkolpichayarak 1999 : 19), which states that feedback information is critical to every activity, and it helps students to some extent increase their learning progress and skills significantly.

The Young Soil Scientists Experiment Exercise learning activity is an innovative aspect of learning science that emphasizes hands-on experiment and strongly links the subject content to the real-life situations. Thus, its result evidently supports the postulation of the increase in learning achievement by level of significant 0.01 among groups of students who were selected to participate in the experimental work.

Recommendation

General Recommendation

1. The result shows that the Young Soil Scientists Experiment Exercise learning activity evidently increases the students' learning achievement because the interest in learning science improves as well. Eagerness in learning science is the

consequence of hand-on experience. Therefore, groups of educational personnel, such as teachers, school administrators and others who are involved in science curriculum should support fellow teachers to produce any type of teaching - learning objects, media and activity for the benefits of educational development.

2. In the Young Soil Scientists Experiment Exercise learning activity, teachers should have a complete understanding and knowledge of activity and its process so that they can adjust the activity according to the diversity of students' ages, skill levels and interests.
3. Laboratory preparation is considered crucial in the Young Soil Scientists Experiment Exercise learning activity.
4. The usage and instruction of laboratory equipment should be taught thoroughly prior to the Young Soil Scientists Experiment Exercise learning activity; therefore, the process of learning and teaching will run without difficulty.

Recommendation for the research

1. A few other variables in the Young Soil Scientists Experiment Exercise learning activity should be taken into account, such as skills of scientific process, creativity and durability in learning.
2. There should be a classroom research on the Young Soil Scientists Experiment Exercise learning activity for the students at different grade levels.

Water Rocket Making and Launching With Parachute

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Abstract

The purpose of this research is to enable my students to make their own water rocket that can fly at a reasonable height. It involves technical activity of making the water rocket, application of Physics Principles which are Bernoulli's principle and momentum in the co-operative learning manner. Water rocket making has become a big hurdle for my form four students. This is because my school will be taking part in the Water Rocket Competition which is organized by the District Education Office. I am focusing my research on making a water rocket, launching it using a parachute and enabling the parachute to open at a reasonable height. My target group is ten Form Four (4SN3) students who are very creative, dedicated have high interest in the subject matter. During the preliminary observation in my pre-test, I discovered that 60% of the water rockets made by my students were not able to fly very high (about 5 storeys). My first intervention was e-friend which enables my students to gain knowledge about water rocket from internet. With this exposure, they were able to make a water rocket based on the shape of a bottle and the fins. My second intervention involved "Smart Sharing" whereby all their work was shown on the notice board in Physics laboratory. The information about water rocket making will be accessible by other students from other classes. My last intervention was known as the "tick-tick sound". In this activity, the student recorded the time interval when the water rocket took off and landed. There were vast differences between preliminary and intervention results. After three interventions, there were 99.8% of the students capable of making a water rocket and launching it successfully. This proves that with interventions, innovation and action research, we can produce good results. Even though, I encountered a lot of hurdles and difficulties in my entire action research, I am very satisfied and happy to see my students who once had no inkling of making a water rocket are now brimming with confidence, creative, innovative and capable to teach others to make water rocket. In fact, with my action research, it has rekindled their hearts to have a water rocket society in the school next year.

1.0 REFLECTION OF PREVIOUS TEACHING AND LEARNING

My class of Form Four comprises of weak, average and excellent students. Preliminary observation shows that launching a water rocket using soda bottle made by the students was quite a failure. Almost 80 % of the students in the class could not launch their water rocket to a reasonable height and if this happens, it would not be able to carry a parachute. I also discovered that their water rocket did not have proper fins. When I questioned them, they replied that they do not have any ideas in making water rocket. Moreover, there was too much water flowing out from the nozzle of the bottle and this has reduced the pressure in

the bottle. Thus I felt that I need an action research to investigate the causes of failure and hence finding the answers to my problems.

2.0 FOCUS OF THE RESEARCH

My case study involves making a water rocket and ensuring that it can fly and achieve a reasonable height of 5 storeys with the parachute open. The problems arise because the students did not have much knowledge and exposure on water rocket. They were not able to relate the Physics principle to the aerodynamic shape of rocket. Furthermore, they don't have a good water rocket launcher.

If I can overcome all the above problems, my students will be more interested in learning Physics through their first hand experience or become more creative and innovative in future inventions. In a way, this will able to build their self- esteem and confidence to face any challenges in their life.

3.0 OBJECTIVES OF THE RESEARCH

The research objectives can be categorized into two: the general objective and the specific objective.

3.1 General Objectives

i. Able to rekindle interest in the students.
ii. Able to apply Physics knowledge in space technology such as water rocket.

3.2 Specific Objectives

The students are able:

i. To improve their understanding of Physics Principles that explains the movement of moving objects for example the water rocket.
ii. To cultivate a creative and innovative thinking mind.
iii. To increase their understanding by applying the Physics Principle and concept in a technical activity.

4.0 TARGET GROUP

My research involved ten Form Four students from 4SN3 which consist of one Malay boy, three Indian boys, four Chinese boys and two Chinese girls. They were divided into two groups, A and B. They are average and excellent students, very hardworking and dedicated to the project.

5.0 IMPLEMENTATION OF THE STUDIES

5.1 Statement of the Problem

Early observation from the pre-test studies, has discovered that the students were unable to launch their water rocket to a desire height of 5 storey's and this gave me an insight the problems faced by my students. They could not measure the right shape of bottle and fins.

The unopened rocket top for parachute and the application of physics principles are involved.

5.2 Analysis of the Problem

Pre-test: observation of the students in the field while they launched their water rocket.

Table 1
Analysis of The Problem

Time	Activities	Comment
First 10.0 seconds	Teacher went to the school field and saw the students holding their water rocket made by themselves.	The students were very eager and looked forward to launch their water rocket.
Next 30.0 minutes	Group A launched their rocket twice with three students helping in the launching and the rest were on standby to repair. The water rocket couldn't fly very high due to too much water and too light fins. It could reach one storey high. Group B are ready with their water rocket and waited for their turn. All the students were very happy and showed a keen interest in launching a water rocket.	The water rocket was filled up to 1/3 of the volume of the bottle. The fins were too light and did not stick well on the bottle.
Next 30.0 minutes	Group B began their launching with full anticipation. Their water rocket performed better than group A. It could reach 2 storey's high. The water rocket had bigger fins. Most of the rocket's nose cone are smashed up and damaged. All the students were very happy, cooperative and full of laughter.	Hard fins were needed for a higher altitude.

From these findings, I then concluded that my students were not able to choose the right shape for the rocket body and fins. They did not use any physics principle to invent their rocket.

5.3 Actions Taken

The implementation of activities together with teaching and learning process lasted for more than 6 weeks. I was able to conduct my research with the help and support from my principal, my fellow colleagues, my laboratory assistant and lastly my beloved, dedicated and hardworking students.

5.3.1 First Activity: e- friend

The students were divided into two groups, A and B. They were guide to surf the internet for information on the water rocket in the Access Room.

Observation:
The students were happy working in their groups. They surf the internet for information. They seemed to be efficient and enjoyed themselves.

Reflection:
Teaching and learning could be done in an effective manner. The students were very interested, self- reliant and joyful during the activity.

5.3.2 Second Activity: Rocket Making Project

Each group was given:

i. 2 plastic bottles of size 1.5 liter, plasticine, metre rule, muslin tape, plastic sheet, double sided tape, scissors, knife, plastic bag and thread.
ii. They were asked to design a few types of fins on a piece of paper.
iii. Later, they traced the fins on the plastic sheet and cut them out.
iv. They stuck the fins on the bottle with the double sided tape and muslin tape.
v. Then they made the rocket's nose cone with the second bottle to store the parachute.

Observation:
The students were very active in this project. They have a discussion and were able to work well with each other. Some students encountered problems and consulted me for help. I observed, supervised and helped them.

Reflection:
The students were very cooperative and show their interest in this project. They were highly motivated. This activity helped the students to explore the production of water rocket by using the Bernoulli's principle.

5.3.3 Third Activity: Smart Sharing

i. The group was asked to present their ideas of rocket making on the manila cards.
ii. Later, the cards were pasted at the back of the form four Physics laboratory for other students to see and learn.

Observation:
This activity is actually a continuation of the second activity whereby they put their ideas on the manila cards. Group A was more creative in their presentation by sticking the plastic fins on the rocket.

Reflection:
This activity helped the students to share their ideas of water rocket invention with the other students in the school.

5.3.4 Fourth Activity: Tick-tick Sound

i. The water rocket invention by the students was tested in the school field.
ii. Each group tried four times and the time was recorded when the rocket took off and landed with the parachute.

iii. The winner was rewarded.

Observation:
During this activity, each group tried to outdo one another. It was like a festive atmosphere where everyone enjoyed watching and playing. These were the results obtained from the activity.

Table 2
The Result of Tick-Tick Sound

Group	**No. of Trials**			
	1	2	3	4
A	43.0.s	40.0s	40.0s	43.0s
B	39.0s	44.0s	37.0s	32.0s

Group A recorded consistent and better results than group B.

Reflection:
This activity attracted a large crowd of students from other classes. The students were eager and wanted to know who the winner was. My students were very active and confident in displaying their skill of launching and recording the time. I felt happy for their success.

6.0 REFLECTION OF THE RESEARCH

In my opinion, this research was successful because:

i. New ideas and information were obtained from the internet.
ii. The students have sufficient knowledge in making a rocket from a soda bottle.
iii. The students use their creativity and critical thinking in the project.
iv. The students have improved their psychomotor skill in rocket making.
v. The students finally realized that Physics lessons are interesting, easy and alive with the application of Physics principles in space technology.

7.0 SUGGESTIONS FOR THE FUTURE

This research has helped me to increase the students' interest in learning Physics focusing on the topic, Force and Motion. Instead they are looking forward to other topics such as momentum, pressure and Bernoulli's principle. It has cultivated a keen interest and critical thinking in them.

As for me, I am more sensitive and aware of the problems faced by my students in the teaching and learning process. Therefore, I will use my own creativity in planning the activities related to the topics in order to make my lessons more interesting and effective.

For my future research, I will try:

i. To make my rocket stay longer in the air.
ii. To have a bigger parachute so that the rocket will have higher air resistance.

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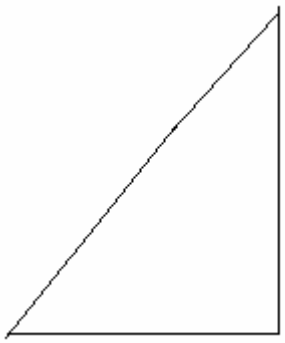
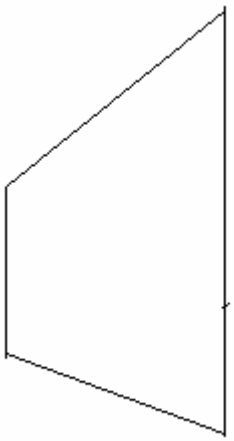
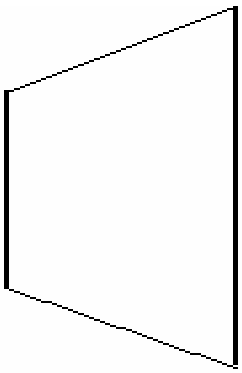
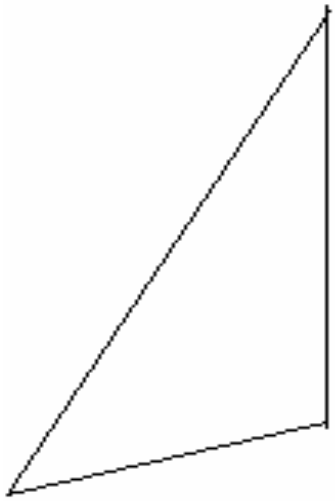
APPENDIX A

Pre-Test

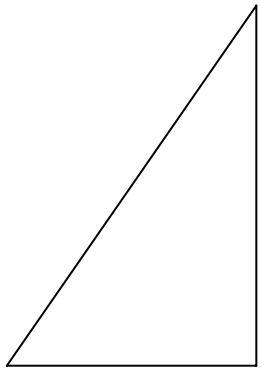
Invention of Rocket's Fins without Any Help

No.	Shape of Rocket's Fin	No.	Shape of Rocket's Fin
1.0		2.0	
No.	Shape of Rocket's Fin	No	Shape of Rocket's Fin
3.0		4.0	

APPENDIX B

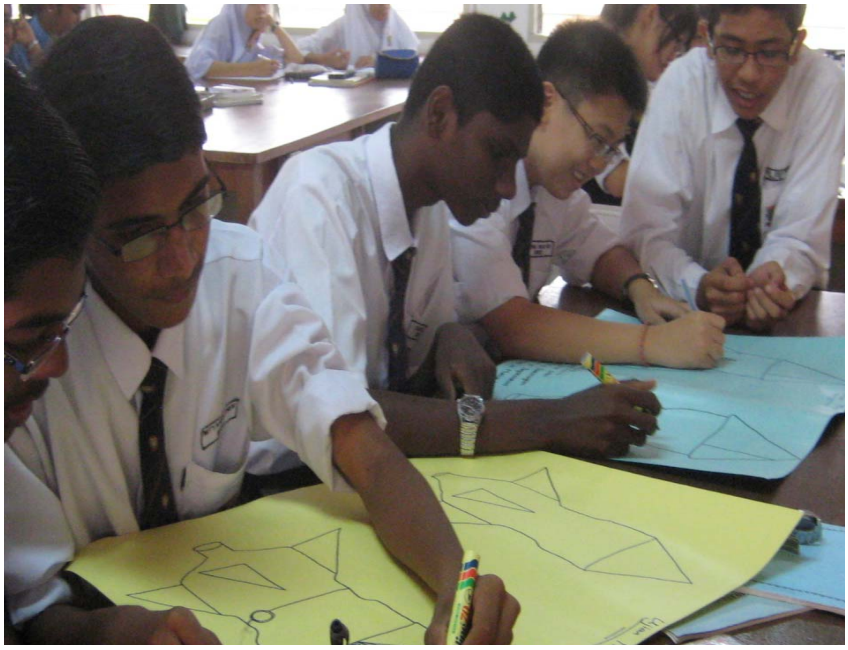
Post Test

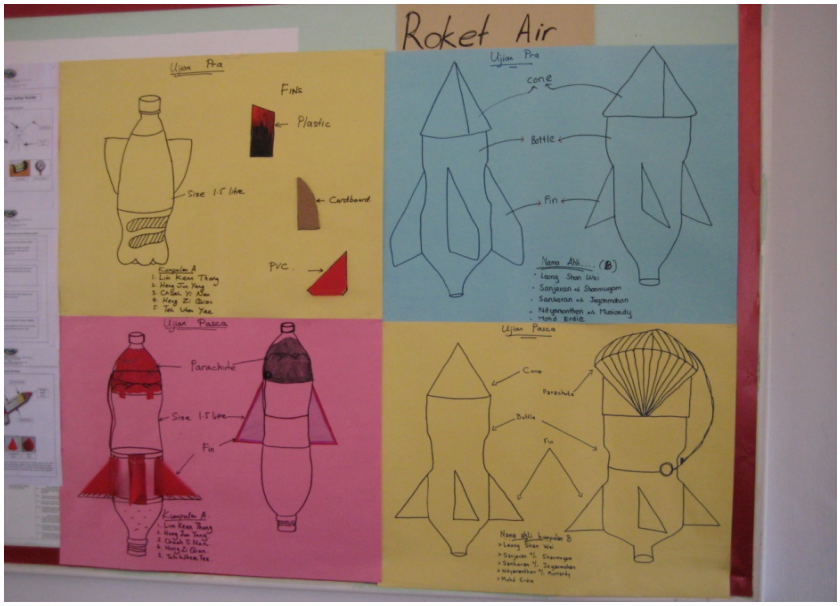
After much testing, the students finally chose this shape of fin for their rocket



APPENDIX C

Smart sharing





The students were launching their water rockets

Making rocket's fin

e- friend

My students and I

A Research Project to Create a Model Inclusive School for Students with Special Needs

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Abstract

This study aimed to develop a model school for inclusion in elementary level. A school in Suphanburi Province was selected purposively as a sample school, involving of 50 teachers (including school administrators), 371 parents, 418 students including 34 of those with special educational needs. The experiment lasted for 1 year, starting from April 2006 to March 2007. Ten different instruments were utilized for collecting the data. The data were analyzed using frequency, percentage, means, standard deviation, t-test and One-Way ANOVA.

It was found that knowledge of the school teachers on inclusive education increased significantly after the experiment. However, no differences were found on the knowledge of the male and female teachers on inclusive school. The school teachers in this study showed positive attitudes toward inclusive school. The attitudes of the teachers increased significantly after the experiment. Parents showed positive attitudes toward inclusive school. The typical developing students also demonstrated positive attitudes toward inclusive school especially those in grade 1 and 2. It was also found that children with special needs improved academically after the experiment both in Thai language and Mathematics.

It was finally concluded that the school was proved to be a model school in inclusive education, demonstrating particularly in administrative systems, students' identification, the Individualized Education Plan (IEP) development, delivery systems, adaptations and accommodations to support students' learning including evaluation, teaching strategies, teaching materials, and the involvement from parents and community.

It was recommended that the Ministry of Education implement similar program in other schools, rules and regulations pertaining to inclusive education be revised and put into practice in order to facilitate inclusion practice.

Key words: *Model School, Inclusion, Children with Special Needs*

Introduction

Considerable efforts have been made in a number of countries towards creating inclusive schools for both children with and without special needs. In the United States, under the IDEA and the No Child Left Behind Act of 2001(NCLB), schools are required to ensure that students with disabilities access to general curriculum with their peers without disabilities. According to the Annual Report to Congress in 2004, the average for the percentage of students who most of the school day in general education classrooms grew from 31.6% in 1989 to 51.9% in 2004 (Ferguson, 2008). Research also suggests that students with mild disabilities including students with learning disabilities, mild mental retardation be effectively educated in regular classroom settings (Madden and Slavin, 1983).

As a result, a number of students with disabilities including those with the most significant disabilities could participate and learned in the general education settings alongside their typical developing peers (Berk and Winsler 1995; Jackson, Ryndak and Billingsley 2000).

In Thailand under the National Education Act in 1999, the movement towards increasing provision for children with special educational needs in ordinary schools has been promoted in terms of inclusion rather than integration. Although schools are mandated by law to provide education for all children including children with disabilities, little data exist addressing the extent to which schools have moved toward students with disabilities in general education classrooms. Many students with disabilities did not received opportunity to be educated in the least restrictive environment because of the limitations of schools. Those limitations included large class size, lacking of special education teachers, insufficient knowledge and skills on the inclusion and instruction strategies, negative attitudes of school administrators and of teachers as well as parents' attitudes.

Therefore, the purpose of this study was to create a model for the inclusive school for students with special needs in Thailand in order for other general education schools to learn from this model.

Method

Participants and setting

The study occurred in a municipality school named Wat Prasart Thong School in Suphanburi province selected by purposive sampling under the following reasons including 1) The school administrator supported the idea of inclusion of students with disabilities, 2) teachers and parents were willing to participate in the study, 3) students with special needs were enrolled in this school already, 4) school facilities and accommodations were available, 5) the school was not far from Bangkok Metropolitan where the researcher team were able to commute.

A total of 34 students with different types of disabilities including 14 students with learning disabilities, 6 students with mental retardation, 3 students with autism, and 11 slow learners as well as 418 typically developing students from grade 1-6. Fifty teachers including school administrators and 371 parents of both students with and without disabilities also participated in this study.

Experimental measures

The School Readiness Checklist was used to identify students who had a tendency of having some type of disabilities as a first step of the screening process.

The Learning Disabilities Rating Scales (Arrayavinyoo, 2005), Information Processing Scales (Arrayavinyoo, 2005), Child Development Inventory, Mental Health Department IQ Test (Ministry of Public Health, 1997), and Learning Achievement Tests were utilized to identified students with learning disabilities, mental retardation. The medical reports were used for the autism diagnosis.

Three attitudes rating scales were utilized to examine the attitudes of teachers, parents, and students without disabilities toward the inclusion of students with special needs.

Individualized Educational Program (IEP) was used for each student to plan and improve their academic achievements.

Experimental design and procedures

The one group pretest and posttest design was used in the study. The study lasted for 1 academic year during April 2006-March 2007. Multiple steps were employed to facilitate the experiment procedures of this study. These steps were as follows;

The research team met the school administrators three times in order to discuss and plan the study. The team then conducted the screening and assessment procedures to identify students with special needs and their strengths and weaknesses, first recommended by classroom teachers.

The team then provided 3 inservice trainings for teachers on several issues including basic knowledge relating to students with disabilities including characteristics of students with several types of disabilities commonly found in general schools including LD, MR, ASD, and AHDH, teaching strategies and how to support students with disabilities in an inclusive settings, and behavior managements. Parents' training was also provided in the area of inclusion of students with disabilities.

The students with disabilities were identified into 4 types of disabilities including students with learning disabilities, students with mental retardation, students with autism, and slow learner students. Then eligibility services and criteria were established by the school committee including the school administrators, special education experts, parents, and special education teachers. Later the students' special needs were identified in order for teachers and research team to support the students' learning. For example, what teaching materials were needed to improve their learning, how much time they needed for each exam etc.

The individualized education plan for each student with special needs was developed.

Those students with disabilities received instruction in three different types of services including 1) full inclusion where student with special needs were in the classroom with their typical developing peers most of the school day, 2) partial inclusion where those students were pulled out to the resource room in some subject areas, Math or/and Thai

language in particular, whereas they attended in the classroom with their peers in other subjects, and 3) teaching assistance program where the students were in the classroom with their peers most of the school day, but there was a teaching assistant to support in the classroom. This type of service was used with students who had more significant disabilities. The teaching assistants typically were parents who voluntarily participate in the study without paid.

For some students with special needs, the curricular were modified for each individual and the students were able to receive a special instruction in the resource room or the pull out program. The students who attended in the second and third programs were exempted to take an exam in the national test, but need to do so in accordance to their curriculum and IEP.

Moreover, teaching materials and story books were provided in each classroom and in the resource room in order to support the students' learning. The IEP of each student were reviewed every year.

Results

Teachers' knowledge on inclusion

Data regarding teachers' knowledge on inclusive education before and after the experiment is provided in Table 1. When comparing teachers' knowledge before and after the experiment, means of teachers' knowledge before the experiment and after the experiment were 2.06 and 3.28, respectively. The data revealed that teacher reported that their knowledge on the inclusive education had increased significantly after the experiment.

Table 1 Knowledge on the teachers' self report on inclusive education before and after the experiment

	Number	$\bar{X}$	S.D	t	P
Before exp.	50	2.0552	0.57283	-10.349	<0.05*
After exp.	50	3.2752	0.68470		

*P<0.05

Teachers' attitudes toward inclusive education

Table 2 provides data regarding teachers' attitudes toward inclusive education for students with special needs. The data revealed that teachers exhibited positive attitudes toward inclusive education of children with special needs. The attitudes of the teachers increased significantly after the experiment.

Table 2 Teachers' attitudes toward inclusive education before and after the experiment

	Number	$\bar{X}$	S.D	t	P
Before exp.	50	3.5251	0.29771	-10.498	<0.05*
After exp.	50	4.1507	0.32249		

*P<0.05

Parents' attitudes toward inclusive education

Table 3 illustrates the attitudes of parents of students without disabilities. Parents reported positive attitudes toward inclusive education of students with disabilities. When comparing parents' attitudes before the experiment and after the experiment, it was found that means of parents' attitudes before the experiment and after the experiment were 3.52 and 4.15, respectively. Parents' attitudes increased significantly after the experiment.

Table 3 Parents' attitudes toward inclusive education before and after the experiment

	Number	$\bar{X}$	S.D	t	P
Before exp	371	3.4911	0.35153	-11.019	<0.05*
After exp.	371	3.7831	0.34426		

*P<0.05

Students' attitudes toward inclusive education

Table 4 illustrates the means of the students' attitudes in grades 1-6. There were significantly differences between attitudes of grade 1 and grade 2 students and grade 3-6 students. Further analysis indicated that the difference among attitudes of students in grade 1(M =2.82) and grade 2 (M = 2.65) was not significant. The differences among attitudes of students in grade 3 (M = 2.47), grade 4 (M = 2.46), grade 5 (M = 2.35), and grade 6 (M = 2.43) were not significant.

Table 4 Students' attitudes toward inclusive education of students with disabilities by grade

Grade	1 $\bar{X}$=2.8274	2 $\bar{X}$=2.6514	3 $\bar{X}$=2.4667	4 $\bar{X}$=2.4629	5 $\bar{X}$=2.3452	6 $\bar{X}$=2.4269
1	-	-0.1760	-0.3607*	-0.3645*	-0.4822*	-0.4005*
2	0.1760	-	-0.1847*	-0.1885*	-0.3061*	-0.2244*
3	0.3607*	0.1847*	-	-0.0038	-0.1215	-0.0397
4	0.3645*	0.1885*	0.0038	-	-0.1177	-0.0359
5	0.4822*	0.3061*	0.1215	0.1177	-	0.0817
6	0.4005*	0.2244*	0.0397	0.0359	-0.0817	-

*P<0.05

When the IEPs were developed, the goals and objectives were set to meet the educational needs of each student with disabilities in appropriate levels as well as adapted evaluation methods were utilized, it was found that the academic achievements of students with special needs improved.

Discussion

The school was the first successful inclusive model for students with special needs in Thailand that demonstrated the basic concept of the inclusion. This inclusive school occurred from the cooperation among school personnel, parents, and the local authorities. The first factor that made this model inclusive school successful was the attitudes of the school administrators. This school was selected to be the research site, because the school administrators agreed in providing educational services for students with special needs and

showed better understanding of the concept of inclusive education. That was the first step of creating a model inclusive school.

Teachers' knowledge on inclusive education and instructional strategies in teaching students in an inclusive education setting is also a key component for the successful inclusion. If teachers perceived themselves that they did not have sufficient knowledge in teaching students with disabilities in the classroom, they was not be able to confidently teach those students .

Teachers' and other school personnel attitudes are also critical for the inclusive education for students with special needs. Negative attitudes toward teaching can also hinder the confidence of teachers preparing to work with students with disabilities. Cook (2002) found that preservice teacher did not feel well prepared to work in classrooms in which one or more students with disabilities were present. Much research also suggests that classroom teachers feel inadequate when children with special needs are included in a regular classroom (Monaham, Miller & Cronic, 1997). In accordance with Fakolade & Adeniyi's (2009) study, that suggested in encouraging teachers to attend seminars and conferences to improve their knowledge in order to accept better understanding of inclusion for children with special needs. Therefore, providing sufficient knowledge related to students with disabilities is one factor to ensure the successful inclusion. This finding revealed that the teachers exhibited positive attitudes toward inclusion of students with disabilities and their attitudes also improve significantly after the experiment.

Parents' attitude is also important and can have an impact on the students' learning. It was found that parents showed positive attitudes toward inclusion of students with disabilities.

Students' attitude toward inclusive education is one of the major components in making inclusion successful. In this study, students in grade 1 and grade 2 showed significantly higher attitudes scores on inclusive education than students in grade 3-6. As students grow, with more complexity of the subject areas, the differences between students with and without disabilities can be obviously recognized. It can be implied that, in order to make the inclusion possible, it is recommended that students with disabilities be educated alongside with their typical peers at the early ages.

To make inclusion possible, developing the individualized Education Plan for each student with disabilities is also suggested. The IEP can be used as guideline for developing appropriate curriculum for students with disabilities. It also assists teachers to set goals and objectives for students in a appropriate level. In this study, it was found that the students' academic achievement was higher after the experiment. This was because their curriculum was modified to be appropriate for their abilities. Teachers were able to provide other adaptations and accommodations in the classroom such as providing more time in working on their assignment, providing an instruction in the appropriate level and pace for some students, and adapting the evaluation methods for these students.

The other finding from the observation in the study was that students with special needs were willing to attend in the resource rooms when time available. This may be because they were able to learn in the appropriate level and pace. Moreover, the program in the resource room was provided with the positive reinforcement.

Recommendations

1. **Recommendations for the policy makers**
   1.1 The policy related to inclusive education be made by the Ministry of Education that include rules and regulations, practical guidance for screening students with special needs, developing the IEP for each students, providing related services and qualified personnel, and teaching materials etc. The policy should include the guidelines for the evaluation process for students with special needs.
   1.2 Implementing this program in other schools is recommended.

2. **General recommendations**
   2.1 This model inclusive school program is implemented in every province across the country. In general, a number of students with disabilities are enrolled in almost every school. This model can be used to alleviate teachers' burdens and anxiety of having students with disabilities in the classroom and they do not know how to deal with those students.
   2.2 School should provide supported personnel such as teaching assistants to support the teacher in the classroom activities.

Limitations of the study

Several limitations to this study suggest areas for further research. First, we generally focused on the whole picture of the process of making the inclusive school possible rather than the outcome. We also emphasized the cooperation among school personnel, researcher team, parents of both students with and without disabilities, and some of the local authority. Students with and without disabilities feel safe and are welcome in this school. Our findings were mostly based on teachers' self reports.

Second, the students' achievements were not measured in according with subjects, but rather we focused on the goals and objectives developed in the IEP.

Third, we did not explore the specific instructional or curricular strategies that teachers used in the classrooms. Observational methods remained absent on how teaching strategies were implemented.

Another problem is the difficulty of measuring success. Attitudes after the experiment have been used as a measure of success because of potential difficulties in utilizing more objective measures.

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Using The 'Cv (Consonant Vowel) Bestari Method' to Improve Writing Skill of Open Syllables Among Dyslexic Students

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Abstract

*The (CV **b e s t a r i**) program was designed to help dyslexic students in a learning disability class at Kerteh Secondary School to improve their skills in constructing and writing skills open syllable words, in the Malay Language. Ten students from the learning disability class who failed their diagnostic test were the target group. An initial study was done through observation, interviews and diagnostic tests. The preliminary study showed that dyslexic students are weak in their writing skills. Thus, the aim of this research was to improve the teaching methodology and find ways to overcome learning problems faced by dyslexic students. Problems faced by dyslexic students were : identifying letters of the alphabet (consonants and vowels), building open syllables and writing 2 syllable words (CVCV) from the **'b e s t a r i'** clues. All ten dyslexic students in this program eventually acquired the intended writing skills within three months.*

1.0 REFLECTIONS ON PAST TEACHING AND LEARNING EXPERIENCES

Over the years, the research team, comprising teachers teaching the Malay Language to students with learning disability have noted that their students have problems mastering writing skills and were unable to respond to questions by their teachers. They could not produce work according to instructions given by their teachers, for example, to construct and to write syllables or words. This is due to the fact that dyslexic students find it difficult to recognize letters of the alphabet, especially the letters 'b' , 's', 'e'. They have difficulties not only in recognizing the letters, but also in sounding out letters and words and writing them. Some of these students even write the letters in reverse. In fact these students could not even write simple syllables such as 'be', 'si', 'sa', and 'se'. This situation has caused a lot of frustrations and anxiety among the teachers teaching this group of students.

Nevertheless, we teachers were determined to find ways and means to help our dyslexic students to overcome their learning difficulties, given the fact that these students did not pose any other disciplinary problems to their teachers. In fact, we strongly felt that it would be possible for these dyslexic students to be able to write well if they are given constant practice and guidance in the classroom. The faith that we had in these children is what eventually led to the conception of the 'CV Bestari Method' which has since helped these students to improve their Malay Language writing skills.

2.0 RESEARCH FOCUS

Ever since the teachers started teaching the dyslexic students at Kerteh Secondary School, they found that the students were weak in their writing skills. A few students were especially slow and weak in grasping the writing skills taught in class. Some even failed to write words.

After analyzing the situation carefully, we found that there were many problems faced by the students that contributed to their difficulty in learning to write. However, this research only focuses on the following problems:

i. Difficulties in recognizing vowels
ii. Difficulties in recognizing consonants
iii. Problems in constructing syllables
iv. Problems in forming words
v. Problems in writing words

It is fundamental for students to master the aforementioned skills as they form the foundation for students to acquire writing skills. Therefore, in our research, we would like to focus on how to help dyslexic students to acquire writing skills. It is our belief that this research would be significant in helping other teachers to develop more effective methods to improve dyslexic students' writing skills.

3.0 OBJECTIVES OF THE RESEARCH

At the end of the research, students should be able to achieve the following objectives:

3.1 General objectives

To improve the writing skills of dyslexic students, particularly in the Malay Language.

3.2 Specific Objectives

i. To help students who are weak in writing to recognize words.

ii. To help students construct simple syllables correctly, such as CV

iii. To help students write and categorize V (vowels) and C (consonants)

iv. To increase students' ability to in apply and construct words, based on the writing skills learned.

4.0 TARGET GROUP

The target group comprised ten students from the learning disabilities class of Kerteh Secondary School, Terengganu, Malaysia.

5.0 IMPLEMENTATION OF THE RESEARCH

5.1 Research Overview

5.1.1 Observation

We used the method of observation in this research. Observations were carried out on the behaviour of the students when they asked questions, when they responded to questions, when they were given worksheets to answer, and during the diagnostic test. The period of observations was one month.

5.1.2 Interviews

Another method that we used to gather information was by engaging in informal conversations with the dyslexic students. By talking to them, we were able to identify factors that led to their inability to master the writing skills. These interview sessions were conducted in school with the students and also with their parents or guardians during parent-teacher meetings.

5.1.3 Diagnostic Test

Ten students took the diagnostic test. The results revealed that and they had difficulties in identifying words.

Example:
The teacher gave a word ‘basi’ and the students were asked to separate and categorize the letters into C (Consonants) and V (vowels). Later they were asked to make CV syllables such as ‘ba’ ‘be’ ‘si’ .

Students’ problems: The students had difficulties in:

i. Recognizing and identifying consonants and vowels
ii. Constructing syllables
iii. Writing the word

5.2 Research Analysis

5.2.1 Observations

Observations done during previous teaching and learning sessions found that the students were weak in their writing skills. Their weakness was recognized when they could not identify words due to the problem of identifying C and V. They also had problems in constructing syllables and words.

5.2.2 Interviews

The outcome of the interview is presented in this section. However, we have only included the interview transcripts of one parent and two students.

Interview 1 (Teacher-Student)

Teacher (T) : Are you interested in learning to write?
Student (S) : Yes, I am interested.

T : How do you feel when you cannot write well?
S : It would be difficult for me to learn other subjects…

T : Which aspect of the writing skill do you have difficulties in?
S : I could not recognize the letters. When you pronounce the word I could not identify the word.

T : Do you do writing exercises at home?
S : No, I only do it in school.

T : Why?
S : There is no one to help and guide me with the writing exercises at home.

Interview 2 (Teacher – Student)

Teacher (T) : Are you interested in learning to write well?
Student (S) : Not really…

T : Why?
S : I find writing difficult.

T : How do you feel when you cannot write well ?
S : I feel left behind compared to my friends.

T : Which aspect of the writing skill do you have difficulties in?
S : I could not recognize the letters. When you pronounce the word I could not identify the word.

T : Do you do writing exercises at home?
S : Sometimes.

Interview 3 (Teacher – Parent/Guardian)

T : Do you know that your son has difficulties in writing?
Mother (M) : No I do not, this is because my son can say all the letters, from A to Z.

T : Have you ever asked your son to write out the letters?
M : Never, I thought he could write, besides I trust the teachers to teach my son.

5.2.3 Diagnostic Test

The test was administered to determine the students' level of ability in writing especially writing open syllables. The diagnostic test was constructed according to the following aspects:

i. Students' work based on the activities carried out by the teachers.
ii. Recorded writing test.

The results of the diagnostic test are as follows:

Table 1
Level of Students' Writing Ability

Aspect	**Number of Students**	
	Weak	**Very Weak**
1. Recognizing vowels (a , e)	6	4
2. Recognizing consonants (b , t)	3	7
3. Constructing syllable (be, sa, ta, ri)	4	6
4. Constructing words	3	7
5. Writing words	2	8

6.0 RESEARCH PROCEDURE

The following steps were taken to overcome writing problems among dyslexic students.

Teacher gave a word and the students were instructed to:

i. List all the V (vowels)
ii. List all the C (consonants)
iii. Join C and V to form a syllable
iv. Join CV + CV to form 2 syllables
v. Join the 2 syllables to form words

6.1 Activities carried out

Four activities were carried out in this research to help student acquire writing skills.

Activity 1 (Recognizing Vowels and Consonants)

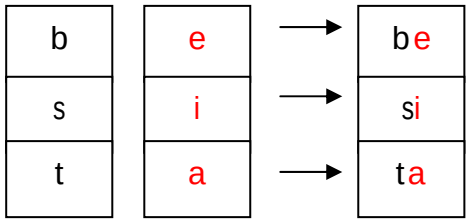
1. Students were introduced to the letters in the word **b e s t a r i** . The vowel and consonant flash cards were used in this activity.
2. The approach used was 'two in one', learning while playing.

3. Music was played to make learning interesting. Once the music stopped, the teacher asked students to pick one letter, either a vowel or a consonant from the flash cards.
4. Then, the teacher asked the students what the letters were- whether they recognized the letters.
5. Next, the teacher asked whether the letters belonged to consonant or vowel groups.
   This activity was carried out to determine the students' weakness in recognizing vowels and consonants before they acquire the writing skills.
6. Later, the teacher asked the students to pick only the vowels from the flash cards and say what they were. This was repeated with the consonants from the flash cards. This activity helped them to recognize and memorize the vowels and consonants.

Activity 2 (Joining Vowels and Consonants to Form Syllables)

1. Students were shown flashcards with vowels , consonants and syllables. The teacher asked them to choose a specific consonant, for example the consonant 'b' and join it with a specific vowel, for example 'e' to form an open syllable 'be'.
2. Students were given 30 seconds to complete the task by forming the open syllable as instructed by the teacher. They had to pick 'b' from the consonant flash cards, join it with an 'e' (chosen from the vowel flash cards), pick 'be' from the syllable flash cards and arrange them neatly on the table. Then, they pronounced the syllable together.
3. This activity was carried out to gauge the students' ability to recognize vowels and consonants and their ability to form the syllable as instructed by the teacher.
4. Later, the teacher asked each student to form 3 syllables by putting together different consonants and vowels, using the flash cards given.

   For example :

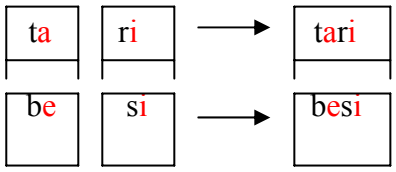


Activity 3 (Smart Combination of 2 Syllables to Form Words)

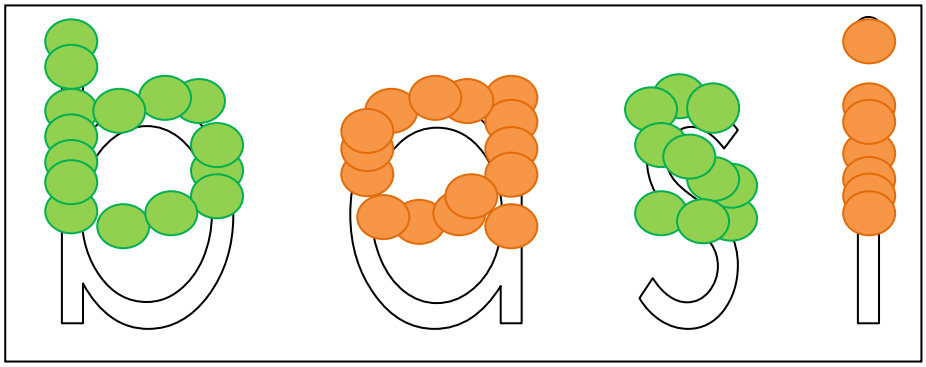
1. This "CAM and CANTUM" method (CAM – Recognize CANTUM – Combine) helped the students to form 2 syllable words from the syllables learnt in the previous activity (Activity 2).
2. Only 8 words were introduced to the students using the 'CV **b e s t a r i** method' so as not to burden them. The words were: 'tari' , 'besi' , 'seri' , 'riba' , 'beri' , 'sari' , 'basi' ,and 'beta'.

3. Students were given the syllable flash cards and word flash cards. The teacher pronounced the first syllable and the students were asked to pick the syllable from the syllable flash cards. Then, the teacher pronounced the second syllable and students had to pick the syllable from the syllable flash cards. They had to put them together and choose the word from the word flash cards to match these syllables.

   For example :



4. The students were also given a polystyrene with the outline of 2 syllable words. They were then given coloured stickers (different colours to differentiate between consonants and vowels) which they had to stick along the outline of each letter. This was an enrichment activity and a fun activity for the dyslexic students. In fact, by using the colored stickers, students could actually see that they had produced the 2 syllable words.



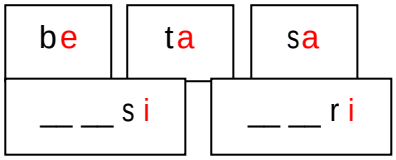
Activity 4 (Quick Writing)

1. Students were given syllable flash cards which they could refer to while they were writing out the first syllable of the words in the worksheet. (They had already learnt the words in the previous activity). The teacher said the words aloud.

   For example :

   (syllable flash cards)

   (worksheet 1)



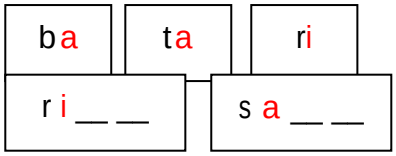
2. Students were given syllable flash cards which they could refer to while completing the second syllable of the words in the worksheet. (They had

already learnt the words in the previous activity). The teacher will say the words aloud.

For example :

(syllable flash cards)

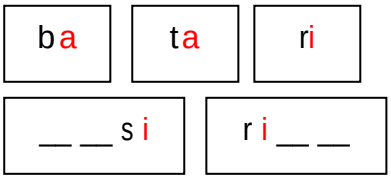
(worksheet 2)



3. Students were given the syllable flash cards which they were allowed to refer to while they were writing the first or second syllable of the words in the worksheet. (They had learnt the words in the previous activity). The teacher said the words aloud.

For example :

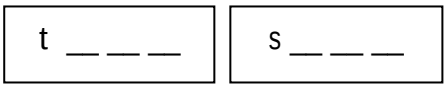
(worksheet 3)



4. Students were given a worksheet. Their task was to complete the spelling of the words given in the worksheet. (They had learnt the words in the previous activity). The teacher said the words aloud.

For example :

(worksheet 4)



6.2 Materials Used

Activity 1 (Recognizing Vowels and Consonants)

i. Vowel flash cards (a, e, i)
ii. Consonant flash cards (b, s, t, r)
iii. Radio cassette
iv. Instrumental music cassette

Activity 2 (Joining Vowels and Consonants to Form Syllables)

i. Vowel flash cards (a , e, i)
ii. Consonant flash cards (b, r , s , t)
iii. Syllable flash cards (ba, be , bi , ra , re , ri , sa , se , si , ta, te, ti)

Activity 3 (Smart Joining 2 Syllables to Form Words)

i. Syllable flash cards (ba, be , bi , ra , re , ri , sa , se , si , ta, te, ti)

ii. Word flash cards (tari' , 'besi' , 'seri' , 'riba' , 'beri' , 'sari' , 'basi' ,and 'beta')
iii. Polystyrene with the outline of 2 syllable words
iv. Coloured Stickers

Activity 4 (Quick Writing)

i. Syllable flash cards (ba, be , bi , ra , re , ri , sa , se , si , ta, te, ti)
ii. Worksheets

7.0 REFLECTION ON THE RESEARCH

The program was effectively implemented. Students were cooperative through out the program. By the end of the program, their ability to write open syllable had improved tremendously.

Table 2
Level of Students' Writing Ability after Activity 4

Aspects	**NUMBER OF STUDENTS**	
	ACQUIRED SKILL	**DID NOT ACQUIRE SKILL**
1. Recognizing V and C (activity 1)	8	2
2. Ability to construct syllable (activity 2)	7	3
3. Ability to construct words (activity 3)	8	2
4. Ability to write words (activity 4)	6	4

- 10 dyslexic students took part in this research

The teachers teaching learning disability classes in Kerteh Secondary School are grateful that the 'CV **b e s t a r i** method' has successfully helped improve dyslexic students' writing skills, especially in writing open syllables. Six out of ten or 60% of the students have successfully acquired the writing skills.

We are also happy that the activities carried out have helped to improve these students' self confidence. Besides this, the students are now motivated to learn by adhering to the motto 'I CAN DO IT'.

8.0 SUGGESTION FOR FUTURE RESEARCH

Considering **'**CV **b e s t a r i** method' has successfully helped to improve dyslexic students' writing skills, we are going to design more innovative and creative activities to assist and guide dyslexic students.

We also suggest that teachers teaching learning disability classes vary their teaching materials , such as using audio visual aids as to introduce more consonants and vowels to them as well as to arouse students' interest to learn them.

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Jabatan Pendidikan Khas, Fakulti Sains Kognitif dan Pembangunan Manusia UPSI. Tanpa Tarikh. Nota-nota kuliah berkaitan pelajar-pelajar Disleksia.

APPENDIX A

Worksheet for Activity 4 (Quick Writing)

Nama : _____ Tarikh : _____

Lembaran Kerja 1
Worksheet 1

Tulis suku kata awal yang betul berpandukan suku kata yang diberikan.
Choose syllables from the box to complete the words below.

be	ba	sa	ri	ta	se

1. ☐ ri
2. ☐ si
3. ☐ si
4. ☐ ba
5. ☐ ri
6. ☐ ri
7. ☐ ri
8. ☐ ta

APPENDIX B

Worksheet for Activity 4 (Quick Writing)

Nama : _____ Tarikh : _____

Lembaran Kerja 2
Worksheet 2

Tulis suku kata akhir yang betul berpandukan suku kata yang diberikan.
Choose syllables from the box to complete the words below.

ri	si	ba	ta

1. ta ☐
2. be ☐
3. sa ☐
4. be ☐
5. be ☐
6. ba ☐
7. se ☐
8. ri ☐

APPENDIX C

Worksheet for Activity 4 (Quick Writing)

Nama : _____ Tarikh : _____

Lembaran Kerja 3
Worksheet 3

Tulis suku kata awal atau akhir yang betul berpandukan suku kata yang diberikan.
Choose syllables from the box to complete the words below.

ri si ba ta be sa

1. ta ☐
2. ☐ ri
3. ☐ ri
4. be ☐
5. se ☐
6. ☐ si
7. ☐ ta
8. ri ☐

APPENDIX D

Worksheet for Activity 4 (Quick Writing)

Nama : _____ Tarikh : _____

Lembaran Kerja 4
Worksheet 4

Tulis perkataan yang mengandungi 2 suku kata yang disebut oleh guru.
Write 2 syllable words as instructed by the teacher.

1. t

2. b

3. s

4. b

5. s

6. b

7. r

8. b

POSTER PRESENTATION

The Poster for Archeo-Astronomy and Geology of Prasats in SURIN Province: the Learning Material

Mr. Sakanan Anantasook
Teacher, Narai-khumpong-witthaya School, SURIN, Thailand

Abstract

The purposes of this research study were to find the ages, the purposes and types of Prasats or the ancient Thai castles in relation to the direction of their constructions from 30 archaeological sites in Surin. The directions of their constructions were measured from the true north with a compass.

The results revealed:

1. The age of each Prasat was related to the direction of its construction; the construction of each Prasat that started in an equinox observed by the early rise of the sun tended to be infinitely variable according to the figure given. During the centuries of Buddhist Era, 16^{th}-17^{th} and 23^{rd}-24^{th}, the directions of the construction lying in the east, the Prasats faced the south to the point of the rising sun. On the other hand, in the centuries of Buddhist Era 16^{th}-17^{th} and 18^{th}, the directions of the construction lying in the west, the Prasats turned to the north where they faced the rising sun.
2. The purposes of construction were related to the ages. Prasats were erected as divine places in 13^{th}-17^{th} B.E. centuries. Then, they became the hospital pavilions in 18^{th} B.E. centuries. Finally, they were set up as the Buddhist places in 24^{th} B.E. centuries, and they were also related to their directions of construction as well as their ages.
3. The types of Prasats were related to their ages. In 13^{th}-17^{th} B.E. centuries, Parsats were made of bricks and with certain artifacts called Tabhlang on the top. After that, in 16^{th}-17^{th} B.E. centuries, they were constructed by using sandstone and red brick stone (Silalang) with certain artifacts called Tabhlang on the top. Then, the construction turned to the use of red brick stone in 18th B.E. century. In the turn of 23^{rd} until the end of 24^{th} B.E. centuries, Prasats were made of bricks and there was a correlation with their directions and ages.

The findings were brought to design as the poster of the Archae-Astronomy and Geology of the Prasats in Surin province by arrangement of the directions from the east degree (17.2) to the west degree (19.2). This research study was partially conducted to promote the local sciences and benefit the action of archaeological astronomy and local wisdom titled "Archaeo-Astronomy and Geology of Prasats in Surin" in the fulfillment of Globe Astronomy and Galaxy course of secondary school level.

POSTER PRESENTATION

Promotion of Student – Teacher – Scientist – Community Collaborative Research on the Earth System Science

Yupaporn Laplai, Malulee Pornchokchai, Samornsri Kanpai, Suwinai Mongkonthan
The Institute for the Promotion of Teaching Science and Technology (IPST)
Thailand

Abstract

There is growing awareness of global environmental change problem that embodies the nature and consequences of natural and human induced change to the interacting physical , chemical , geological , biological and social processes that regulate the environment supporting human life and influence the quality of life on planet Earth. Understanding Earth as an integrated system of component and processes has become the dominant paradigm in Earth and Space Science research and should become the central principle in Earth and Space Science education as well. Since 1995 , the GLOBE (Global Learning and Observation to Benefit the Environment) program was originated in USA and has been implemented worldwide focusing on students-teacher-scientists-community collaborative research on Earth System Science. The Institute for Promotion of Teaching Science and Technology (IPST) , Ministry of Education has been appointed as the co-coordinating and implementing agency for the GLOBE Program in Thailand in 2004.

IPST and her partnerships (universities and other organizations) have committed the GLOBE mission with strong intention to enhance the awareness of individuals throughout the nation to benefit the environment contributing to scientific understanding of the Earth as a system and support student across the curriculum with focus on Student-Teacher- Scientist – Community collaboration research. The research areas are focused on Season and Biome, Pheonology, Watersheds, and Soil Improvement (Young Soil Doctor).

Teachers and students were selected to participate in workshops to observe the natural setting, asking questions, develop research questions, and design investigation, as well as learning how to develop research proposal. After the workshops, the students were encouraged to write ESS research proposals to get funding from IPST. There are 194 researches from 303 schools, being funded by IPST. 30% of those are in the stage of submitting their research reports. The National Science Education Standards : Fundamental Abilities Necessary to do Scientific Inquiry were used to measure students scientific inquiry from each student's research report. It was found that 50% of total students submitted research reports show : (a) the ability to identify question that can be answered through scientific investigation which effect ,(b) the ability to design and conduct a scientific investigation , (c) the ability to use appropriate tools and techniques to gather, analyze and interpret data, (d) ability to develop description, explanation predictions and models using evidence, (e) ability to think critically and logically to make the relationships between evidence and explanation, (f) the ability to recognize and analyze alternative explanation and predictions, (g) the ability to communicate scientific procedures and explanation, and (h)the ability to use mathematics in all aspects of scientific inquiry. Some of research reports will be presented on the poster.

POSTER PRESENTATION

A Development of a Learning Management Model Enhancing Learner's Systematic Thinking Process in a Mathematics Course for Mattayomsueksa 6 Students at Mahasarakram University's Demonstration School

Boonleang Thumthong
Mahasarakram University's Demonstration School
Mahasarakram Province, Thailand

Abstract

This research aims to develop a learning management model enhancing learner's systematic thinking process in studying mathematics for Mattayomsueksa 6 students and to study the effects of using the established learning management model with Mattayomsueksa 6 students at the Mahasarakham University's Demonstration School. The target group of this study is 200 Mattayomsueksa 6 students who are taking Mathematics. This study uses research and development format; using the research results to develop a learning management model that enhances systematic thinking process of students as proposed by Kreutzer (2001). Tools for data collection are a systematic thinking process evaluation form and an interview form concerning systematic thinking process of students. Data analysis is done by using mean, standard deviation, protocol analysis, analytic description, explanation, interpretation, and summarization. The research finds that:

1. After studying and analyzing books and journals, a learning management model that enhances systematic thinking process in mathematics of Mattayomsueksa 6 students at Mahasarkham Univerisy's Demonstration School can be developed into an 8 steps model: 1) Stimulating problems, providing situations, creating intellectual conflict. 2) Understanding problems, finding information, organizing problems. 3) Developing ideas. 4) Communicating and adjusting ideas. 5) Planning how to present the group's ideas. 6) Presenting the group's ideas. 7) Discussing the ideas from many groups. 8) Evaluating students' thinking process.

2. Good teacher's roles according to the learning management model that enhances systematic thinking process in mathematics consist of 3 roles: 1) Facilitator of individual development. 2) Manager of the learning environment. 3) Mediator of human relation. Furthermore, good learners must have 5 important qualifications: 1) Active learning. 2) Self discipline. 3) Team learning. 4) Personal mastery. 5) Mental model.

POSTER PRESENTATION

Results of Construction and Implementation of Learning and Acting Handbook for Classroom Action Research : Physical Education for Development of Teachers' Quality in Si sa ket Education Service Area Office 1

Mr. Sompoch Lakthan
Educational personnel expert at Si sa ket Education Service Area Office 1
Si sa ket Province, Thailand

Abstract

1) To create and improve Learning and Acting Handbook, research in Physical education class.
2) To compare research knowledge in physical education class, attitude towards the research in physical education class, and teachers' behavior concerning knowledge management on physical education, pre and post period of Learning and Acting Handbook implementation, classroom action research.
3) To study the quality of classroom action research conducted by teachers.
4) To study the development of learning quality of learners. To create and improve Learning and Acting Handbook.

Physical education research classroom is divided into 3 periods (R&D): 1st period between academic year 2547-2548 (2004-2005) - process of creation and trial period; 2nd period in academic year 2549 (2006) - trial period and improvement of method and; 3rd period in academic year 2550 (2007) - implementation in order to improve teachers' knowledge. Evaluation of Learning and Acting Handbook physical education research classroom by experts in order to get the most appropriate level of Learning and Acting Handbook.

In academic year 2550 (2007), the implementation was carried out to improve the quality of physical education teachers between years 1-4 involving altogether 30 teachers. The objectives were to increase their knowledge and understanding the development of knowledge management quality to improve learners' quality. The research process was being used in classroom. The sample group consisted of volunteers and specific sample groups were selected. Three seminars were being conducted for the duration of 5 days between July to October 2550 (2007). All seminars were based on action training - workshops activities - Handbook study - tasks presentation – discussions - questions and answers – observations - pre, post and between data gathering. The tools which were used in this research:

1) Learning and Acting Handbook physical education research classroom:
   volume 1-4:
   1st volume - classroom research examples: physical education (84 pages);
   2nd volume - classroom action research: physical education (212 pages);
   3rd volume - assessment and evaluation tools: physical education (267 pages) and 4th volume - writing report on classroom research: physical education (63 pages).

2) Data collecting tools 5 volumes: classroom physical education research test; assessment of attitude towards classroom physical education action research; assessment of behaviour towards knowledge management in physical education and; assessment of Learning and Acting Handbook.

The data analyzing programme were used in the classroom physical education research and the statistics used were: mean value, standard deviation, percentage, match-paired t-test and lectures on quality assessment.

The research results found that:

1) Learning and Acting Handbook classroom physical education research is qualified by the experts and teachers' assessment.
2) The post attitude towards classroom physical education research and post behavior of knowledge management in physical education of teachers are higher than before the introduction of Learning and Acting Handbook classroom physical education research statistically at 0.5.
3) The quality of most teachers in the physical education research classroom is overall good.
4) Learners acquire higher skill in movement and sports and teachers acquire more classroom physical education management knowledge.
5) Teachers show higher behavior towards physical education management knowledge.
6) Teachers show higher attitude towards classroom physical education research.
7) Learners acquire higher ability in movement and improved their sport skills.

POSTER PRESENTATION

A Dimension of Cooperation in Islamic Studies Thailand – Malaysia

Fatina Wonglaykha
Educational Bureau of Academic Affairs and Education Standards
Office of the Basic Education Commission
Ministry of Education, Thailand

The Ministers of Education of Thailand and Malaysia have signed a Memorandum of Understanding (MOU) with regards to a cooperation of education such as a joint of school and institucation linkages, information and communication technology, religions education, curriculum development etc.

The Progress of Cooperation on Islamic Studies between Thailand and Malaysia:

- 26 - 29 June 2007: A group from Thailand's Education Ministry visited Malaysia for overseeing Islamic Studies, meeting and negotiating for co-operation.
- 26 August - 8 September 2007: Malaysia organized a training course for 100 Thai Islamic teachers.
- 26 – 28 February 2008: A group of instructors from 5 institutes followed up the adaptation and application of knowledge gained from the trainings in Malaysia.
- 27 April - 1 May 2008: A group from Thailand's Curriculum Development of OBEC made study visit to Malaysia for Islamic Curriculum.
- May 2008 - May 2013: Malaysia has supported a scholarship for 60 Thai students in secondnary schools per year.
- May 2008 - September 2009: Thailand by OBEC develops Islamic Curriculum for primary and secondnary education.

SPECIAL INTEREST GROUP SESSION

Evaluative Researches on the Project of Islamic Studies in Thailand

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The Evaluation of Parallel Educational Project between the Governmental School in Fundamental Level and Islamic Educational Center (Talika)

The purposes of this study were to evaluate the factors (input), processes and output(s) of the parallel educational project between the governmental school in fundamental level and Islamic educational center (Talika), problems, obstacles and suggestions.

The population were 140 schools under the jurisdiction of the Ministry of Education in fundamental educational committee department of Pattani, Yala, Narathiwat and Songkla (some districts) province. The example groups of 1,260 persons were the school's principal, teachers or lecturers, parents and school's committee or the religious leaders selected by purposive sampling. The researchers used questionnaires and in –depth interview for data collecting. Frequency, percentage, mean and standard deviation were used for data analysis.

The results of the evaluation were commonly found as follows:

1) The evaluation of factors or input in the title of the suitability and sufficiency of budget, the suitability in area of working, the admiration of the target groups were highly passed the judgment in any aspects.

2) The evaluation of process in 7 aspects were:

2.1 In an explaining the working by meeting methods to create the good relationship of persons was passed in all aspects.

2.2 The co-operation in school resources using was found that the governmental schools always shared it own utensils with Talika Islamic's center in 100 percents. However, the use of school building(s) and other building(s) for sacred teaching and in any occasions was not passed.

2.3 The co-operation of the personal relation and working was passed in only one aspect such as the Talika teachers were invited to teach the religion in school but except in helping hand in personnel improving or human developing in Talika' teachers training in teaching methods and academic visiting both inside and outside country were not passed.

2.4 The academic co-operation was not passed in any aspects.

2.5 The co-operation in utensils , teaching instructions and learning resources use such as in developing and the use of the community learning resources for Islamic teaching, teaching instructional development and library use for searching the information were not passed smoothly.

2.6 The co-operation of budget management was passed in any aspects.

2.7 The co-operation in community activities were passed in some aspects but the co-operative in school personal meeting was not passed in ideas.

3) The evaluation of output to the student was found that, it was in high ranking in 3.48, but when it was compared with the whole project, it was not passed at all, so this case can divided into 2 aspects of reasons. The first reason was not negative aspect such as the students can use and apply the Islamic principle and Islamic practice in daily life in happy time and got a religious certificate to pursue study in a governmental school. The second was rejected, the students can transfer their academic recording score to the governmental school so the students can reduce their academic time in Islamic studies at school (it means that it had a little time for studying the religious lesson in school). The result effect of the community(s) was in highest ranking in 3.87, which means that it was passed in evaluation. The result of gratification of target group appeared in high ranking in 3.50 and was interpreted that it was passed in evaluation too.

4) The problems and obstacles of this study were 1) the annual budget came late and was not sufficient for project(s) working or improving, especially in bilingual material for teaching and 2) the coopertion between school teacher(s) and Talika center teacher (s) was not suitable in time so there was not enough meeting time of both institutes.

The Evaluation of Islamic Studies Development Project in Primary and Secondary Level

The aims of this study were to evaluate the factors (input), processes and output(s) of the Islamic studies development in primary and secondary level, problems, obstacles and suggestions.

The population as schools under the jurisdiction of the Ministry of Education in fundamental educational committee department of Pattani, Yala , Narathiwat and Songkla (some districts) province, totally 142 schools. The example groups were the school's principal, teachers or lecturers, parents and school's committee or the religious leaders by purposive sampling conducted in 1,278 persons. Questionnaires and in –depth interview were used for data collecting. Frequency, percentage, mean and standard deviation were used for data analysis.

The results of the evaluation were commonly found as follows:

1) The evaluation of factors such as curriculum , harmonious with community and budget were passed in all aspects, except in teaching instructions of which 2 indicators such as Islamic studies instruction or teaching materials and the information technology were not passed. In constructions or building and learning sources, 4 indicators from 7 indicators, such as religious chanting place, restroom for preparing themselves before chant, learning sources concerning Islamic studies and learning sources were not passed. The Islamic teacher was passed in this evaluation in the concept that all of them graduated with bachelor degrees in Islamic Studies, but the number of teachers were not suitable for the number of the student.

2) The evaluation of the process was shown that in any aspects such as the management of the school principal, the following evaluation of school principal and the

community participation were passed in the highest rank in all aspects. For teaching process such as the teaching preparation, learning activities process and creating the warm atmosphere for creativity in learning were passed, except in classroom research.

3) The evaluation of out - put that was appeared in the achievement score of the primary and secondary students in Islamic studies in 8 subjects, in 67.67% (it means that it was passed) and the evaluation of target' gratification from school's principal , teachers or lecturers , parents and school's committee or the religious leaders were extremely passed with a high score of 3.50

4) The problems and obstacles of this study were 1) the annual budget was less than the demand of the schools such as the budget for preparing the students' chanting room, the continual time of budget payment or the delay of budget payment in the topics of lately teacher salary payment and the stability and contiuity of Islamic studies policy. Others suggestions that strongly confirmed the findings were ; a) making the permanent project and opening the Islamic studies parallel with the 1997 governmental educational curriculum in fundamental level in every school and b) making the suitable budget management for sufficiency.

The Evaluation of an Applying the Bilingual (Thai and Malaya) in Teaching and Learning Project for the Lowest Southern Part of Thailand

The objectives of this study were to evaluate the factors (input), processes and out-put(s)of an applying the bilingual (Thai and Malaya) in teaching and learning project for the Lowest Southern Part of Thailand , problems , obstacles and suggestions.

The population was schools under the jurisdiction of the Ministry of Education in fundamental educational committee department of Pattani, Yala, Narathiwat and Songkla (some districts) provinces, totally 36 schools. The example groups of 396 persons were the school's principal, teachers or lecturers, parents and school's committee or the religious leaders chosen by purposive sampling. The researchers used questionnaires and in –depth interview for data collecting. Frequency, percentage, mean and standard deviation were used for data analysis.

The results of the evaluation were commonly found as follows:

1) The evaluation of factors (in-put) in all aspects was passed, especially in budget management which was in the highest rank (more than 70 percent), the budget management for agenda meeting of the relative person in educational or learning management, Instructional production / purchasing /the knowledge of the personal / lesson plans designed in bilingual that was concerned with the Early – childhood in 1995 national curriculum.

2) The evaluation of process was passed in all aspects in the highest ranking (every school used it) such as the planning design, agenda meeting and public relation announcement for school personal, teachers, school committee, parents and community , instructional material creating and lesson plan designed in bilingual for Early-childhood

students in grade 1 – 2 , the educational following and the result reporting, the teacher exchange program in teaching process in 91.67 percent.

3) The evaluation of output to the student was found that it was passed (more than 3.50) and can be explained by the following ; a) the student(s) who was studying in bilingual school had more confidence in communication with teacher (average score 4.50) than the students who did not study in this program, b) the student's development of physical, emotional, social and cognitive domain were passed in the level 3 of the evaluation criteria, c) the co-operation and supporting from parents and community was found that it was passed in 4.11 of the evaluation criterion score, d) the evaluation of target's gratification were in high ranking in 3.50.

4) The problems and obstacles of this study were 1) the targets has no confidence of the policy because this project was opened only in some school(s) and it had not a continual plan for the student to pursue studying in the primary school (prathom 1-3). Furthermore, the government should open the opportunity and support the community's school in co-operation with this project and finally should open the bilingual school (Thai and Malaya) in prathomsuksa 1.

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