



Using Computer Simulations for Experiments on Alternating Current.

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Research Background

Problems

1. The physics equipment **not enough**.
2. The experimental is **dangerous**.



Research Background

To solve a problem

✘ 1. Buy a new physics equipment .

✘ 2. Changes : subject , curriculum. director.



3. Change : Me



Research Background

Solve a problem by simulation.

Problems and tasks for physics teaching in alternating current which cannot be done by equipment.

Create simulation by MS EXCEL



Objectives

1. Develop physics simulation.
2. Study the achievement
3. Study the attitudes.



Conceptual Framework

Ind Var Learning by computer simulation experiments on AC.

Dep Var Achievement on AC

Outcomes Students learn the new process in new ways.
Software simulation experiments on AC



Research Methodology

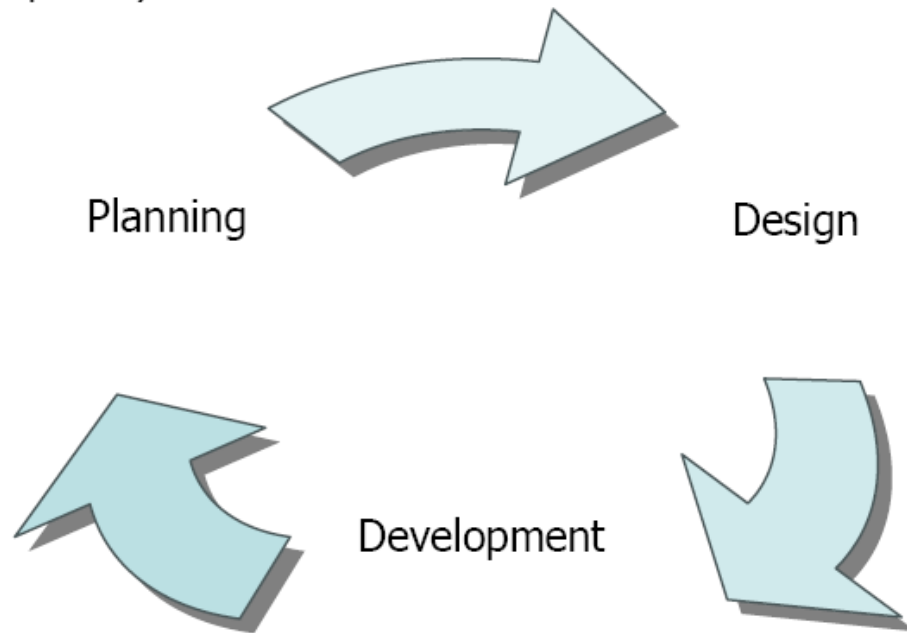
1. Participants

1. Grade-12 students at Secondary Satuek Secondary School .
 2. There were 45 students.
 3. Purposive sampling technique.



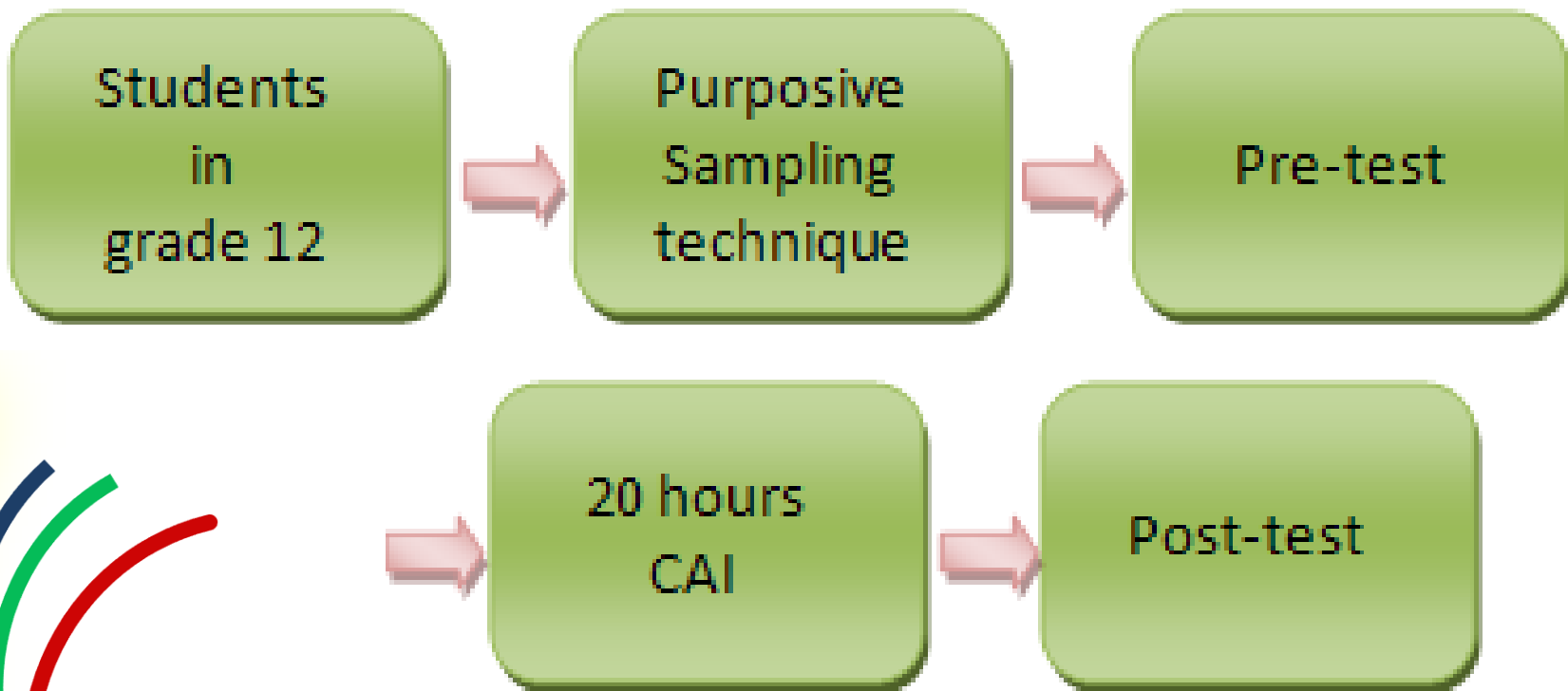
Research Methodology

2.Design and Development



Research Methodology

3. Study design.



Research Methodology

4.Data collection.

Pre/Post-test scores on the alternating current were the major dependent variable in this validation.



Research Methodology

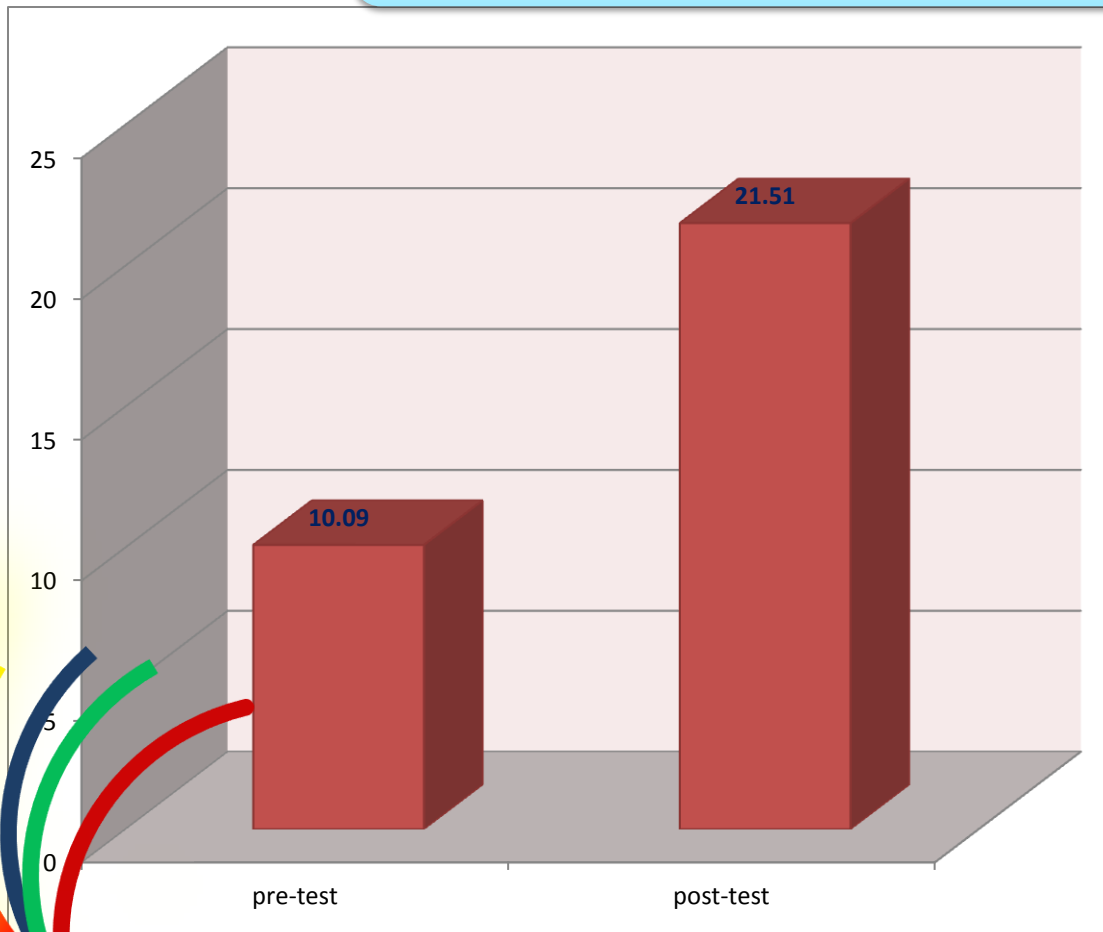
5.Data analysis.

- Descriptive statistics
- The class normalized gain (g)



Results.

1. Descriptive statistics.



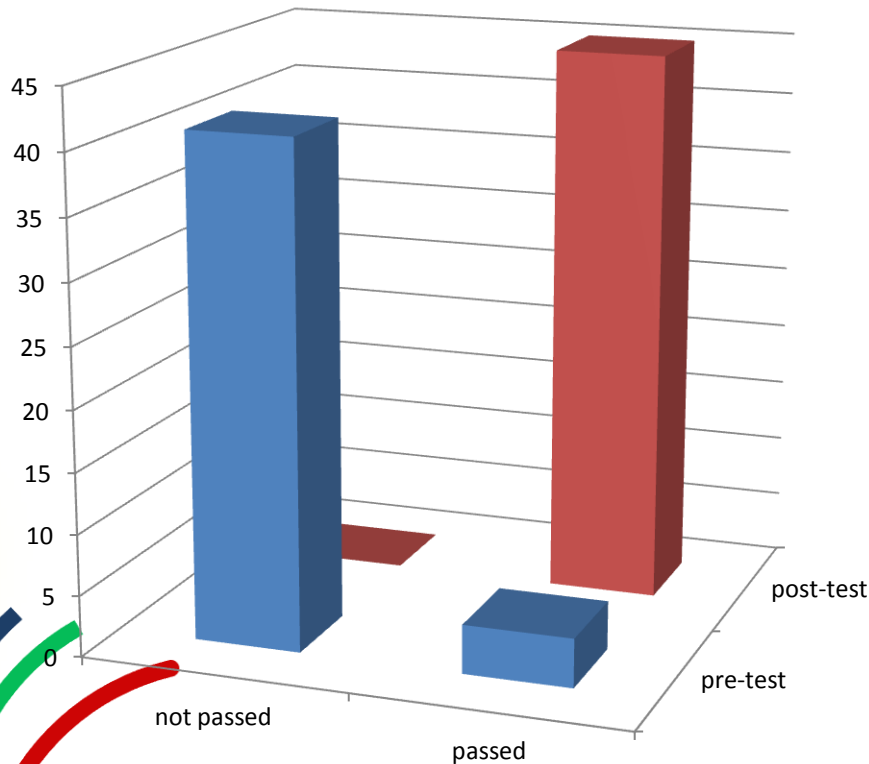
Demographic data
presented as Mean \pm SD

Pre-test = 10.01 \pm 3.01

Post-test = 21.51 \pm 3.30

Results.

1. Descriptive statistics.



4(8%) students
passed pre-test

45(100%) students
passed post-test

Do you know?
Why are they passed?

Result.

2.The class normalized gain (g).

$$g = \frac{(post-test\ average(\%)) - pre-test\ average(\%)}{(100 - pre-test\ average(\%))}$$

$$g = 0.57 \quad \text{Was medium}$$



Result.

3. Student's attitudes

The attitudes score was
 4.01 ± 0.25 .

The student's attitudes toward to
used of computer simulation was
highly positive.



Conclusion & Recommendation

1. Simulation.

Simulations offer very important tools used in research and techniques for understanding real physical laws and phenomena.



Conclusion & Recommendation

2. Successfully.

The computer simulations for experimental on AC is a **useful** and effective aid for teaching AC principles to students. The students **enjoyed** the learning process.



Conclusion & Recommendation

3. Curriculum integration

Lecture



successfully

CAI

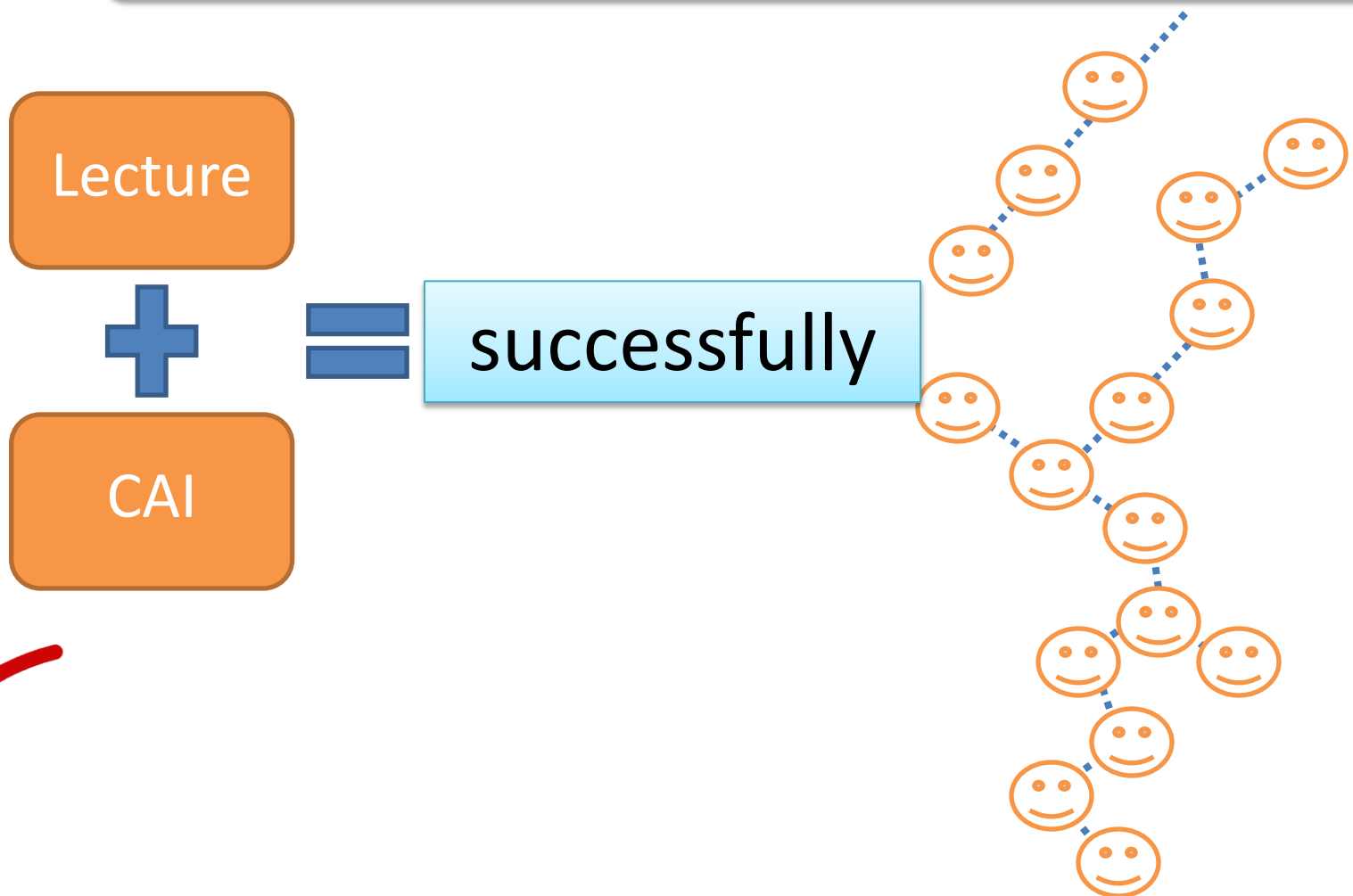


successfully



Conclusion & Recommendation

3. Curriculum integration



The Best of the Best
Innovation is a
Teacher

Many Many Students
are Waiting for
You Help.

Many Thanks
Ministry of Education
Office of Education
Council