

# Learning@MWIT: Changed by design, Prompted by pandemic

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## Abstract

The COVID-19 virus that has been contracted by upwards of 206 million people and caused over 4.3 million deaths around the world began to spread to the local population in Thailand in March 2020. Since then, major disruptions to public and private life have forced great upheaval in Thai society as the government struggles to contain the outbreak. This is particularly true in the education sector where schools have had to rethink and revamp their entire education system. As one of the first science schools in Thailand, Mahidol Wittayanusorn serves a model for other Thai schools adapting to teaching and learning during the COVID-19 outbreak. In this paper, the effects of the pandemic on MWIT are discussed, together with how teachers, students and administrators transitioned to hybrid online learning and used the disruption caused by school closures to develop a new system of content delivery. The future direction and implications of this reinvention of our school are discussed in the last part of this paper

## COVID-19 arrives in Thailand

The news of a novel highly-contagious virus spreading in Wuhan, China reached Thailand at the end of 2019. It was not taken seriously by the general population until Thai people started to become infected in growing numbers. Thailand was in fact, the first country outside of China to report a COVID-19 case. On 13 January 2020, the Thai government announced that the virus had been detected at Suvarnabhumi Airport during a temperature check of a Chinese tourist who had arrived from Wuhan a few days earlier. Thailand is a popular destination for Chinese tourists with over 9 million visiting the country in 2019. As Chinese New Year 2020 approached near the end of January, the number of Chinese tourists to Thailand increased as did the number of local COVID-19 infections. This resulted in a heightened sense of alarm and a growing fear of the virus amongst the Thai population. People were finally starting to take notice and contemplate ways to combat its spread.

## MWIT responds to the outbreak

At Mahidol Wittayanusorn School (MWIT), the management team started to monitor the spreading virus around the end of February when Thailand still had a relatively low number of total reported cases. At the beginning of March, MWIT administrators began considering the worst-case scenario, a total school lockdown, and what the school would need to do to confront it. If students were unable to attend school due to a lockdown, MWIT was in a relatively favorable position thanks to its

higher-than-country average IT infrastructure and the strong IT literacy of its teachers and students. Fortunately, in March 2020, the school already had plans to upgrade the notebook computers it provides to all teachers and staff. When the new notebook computers arrived we had enough computers to ensure that all teachers would be able to teach from home and even had enough spares to give to students who needed them. Our school's bandwidth connections were upgraded and additional webcams and monitors were provided to teachers. When the order to lock the school down came at the end of March, we had just finished our academic year and students had already left the school. With our technology upgrades, we were confident that we had secured the equipment we needed to face the next academic year set to open in May.

### Adapting to the “new normal”

In the first week of April, following Health Ministry projections for the spread of the virus, the Thai cabinet agreed to a Ministry of Education proposal to postpone the start of the 2020 school year for all schools until 1 July. However, as MWIT had made the necessary preparations for online teaching during the school break in March and April, the school asked for permission to reopen on 8 June using an online platform to deliver lessons to its students. After upgrading its IT infrastructure in March, the school held numerous staff-training sessions on online teaching techniques and how to use Google Educational Suite teaching tools. The trainings were in-house, two-step trainings. The first step was technical training for all department representatives by our IT staff. This step focused mainly on the technical dimensions of the software. The next step was department only trainings conducted by each department's representatives with technical support from our IT staff. These trainings focused on both the technical issues and application of the programs to teach each department's subject. As every department had their own specific teaching requirements, it was more efficient to group staff from the same department together. After our teaching staff became familiar with the many Google Education Suite applications, they started to create online assignments and quizzes. As the new online lesson content was to be delivered through video clips filmed by the teachers, we soon realized there was a need for basic video editing training and with the help of our IT department these trainings were immediately provided. Thanks to our training program in a very short time teachers were able to compile the online materials MWIT needed to switch to full online mode.

In order to cope with the demands of online learning and to differentiate synchronous learning from asynchronous learning, the first semester of the 2020 MWIT school year started with a new timetable. With this new timetable, one online period was set at 25 minutes, compared to 50 minutes for normal in-school periods. School administrators felt the change was necessary because of the increased fatigue and eye strain students feel when learning online. Teachers were asked to replace their normal classroom lectures with self-learning materials they compiled for students to study asynchronously, while the face-to-face synchronous lessons were only to be used for discussion, feedback, and other

interactive activities. It was a difficult transformation for both teachers and students. Some teachers continued to give normal lectures during the synchronous lessons, while some students had problems managing their schedules at home and found it difficult to self-study effectively.

MWIT conducted a survey of teachers and students two weeks after the start of the new semester to determine how they were adapting to the new online learning system. This helped us to see clearly what was working and what wasn't and showed us the adjustments that were needed in order to make the online platform more effective for all participants. It is important to have a feedback loop with all stakeholders: teachers, students, and parents so that necessary improvements can be implemented quickly. Schools sometimes focus too much on only giving feedback to students on how to facilitate their learning while neglecting to build a system to receive comments from students in order to refine its teaching practices. During the first semester, we conducted further surveys at the end of the first month, the second month, and at the end of the semester. The most frequent complaint we received from our students had to do with their workload. Students felt that the number of learning materials they were required to study and assignments they had to complete were overwhelming. Although the school had set limits on the number of assignments teachers were allowed to give students each week, some teachers had underestimated the time students would need to complete their assignments. Another reason that students found it difficult to meet online course requirements was that they had problems with time management. Being at home without teachers or classmates to remind them to complete their work, many students continually put off doing assignments until the last minute, this procrastination resulted in stress and a sense of being unable to cope.

### Problems adapting to the change

The response to school-lockdowns in other public schools was varied with some faring better than others. Some schools started their new semester in May or June by having their students learn at home by watching on-air television lectures. In July, public schools had planned on having all students return to school to study but due to the difficulty of ensuring that classrooms were safe, this turned out to be an unachievable goal with many schools unable to fully open. Various makeshift solutions were proposed, some schools tried an alternating attendance system by having half of the student body study in school while the remainder learned at home. Other schools realized that the only way to keep students safe from the virus was to keep them at home and deliver lessons to them as best they could. The biggest dilemma for teachers and students in most Thai public schools was that each school had to deal with this unprecedented situation on their own. As there was no clear guidance on how to adapt to the “new normal” of online learning during COVID-19, schools had to rely on their own resources and wisdom to cope. Even though content was now being delivered online, most teachers continued to teach as if they were in the classroom, showing the students powerpoints and lecturing at them on end. This resulted in extremely challenging learning environments for students who had only smartphones to access the

internet. Their screens were too small to follow powerpoint lectures and the connection speeds were unstable, if available at all. On top of this, the suitability of each student's learning environment depended on their family situation, some students were forced to share devices and study in crowded rooms with other family members. These problems became more severe when the number of cases continued to increase and everyone had to remain at home to work or study which only increased the digital divide between Thai students in large urban areas and their peers in the countryside. The digital connections, devices, and learning environments required by students during this difficult time put an unfair burden on students from low income backgrounds.

### New strategies to cope

In July 2020 as the spread of new infections in Thailand seemed to be under control, MWIT wanted to evaluate the precautions we had put in place throughout the school to minimize any possibility of virus transmission to students and teachers. We decided to have one grade level of students return to the school for a three-week onsite teaching and learning trial. As the Grade 10 students had yet to spend any time in the school and get to know their teachers and classmates, we invited them to return the first week of August. During this onsite period, a dual timetable was implemented, an online one for Grade 11 and Grade 12 students who remained at home, and a redesigned timetable for in-school students. In an effort to make up for practical hands-on activities students were unable to complete during the lockdown period, the redesigned timetable focused mainly on science lab work, team-work projects, and activities to help the new students get accustomed to the school. After successful completion of the Grade 10 onsite learning trial, onsite learning sessions were held for Grade 11 and Grade 12 students.

When our second semester started at the end of October 2020, the COVID-19 situation had improved to a point where the school felt it was possible to have all 720 students return for onsite instruction. In order to protect the health and safety of students and staff, masks and social distancing policies were enforced and the school operated on the revised timetable put in place during the first semester. We also reduced class sizes and shortened the number of hours students gathered together in order limit the possibility of virus transmission. Students were provided areas throughout the school where they could safely study on their own. For eight weeks, there were no cases of COVID-19 in the school and students were happy to finally be able to socialize with friends, meet their teachers, and enjoy a sense of normality. Things were looking up and the school was even able to hold its annual Sports Day event on 19 December. Unfortunately, the very next day, responding to another serious outbreak of the virus in several provinces, the Thai government ordered all schools to close immediately and return to online instruction. And that continues to be the case at MWIT to this day, teachers and students remain at home and all teaching and learning is conducted online.

## Speeding up the move to online learning

During the past 18 months, MWIT has dramatically changed our approach to teaching and learning by asking teachers to plan, prepare and deliver online lessons while at the same time helping students to see the importance of improving their organization and time management skills needed for self-study. Although from the outside, it may seem that this transformation was a direct response to the COVID-19 pandemic, this is not entirely the case, the restrictions placed on the school's operation only accelerated the implementation of a strategic plan the school had made for transitioning to online learning in order to adapt to the ever-increasing importance of the internet and digital literacy on education in the 21st century. The first school closure in March 2020 may have surprised us but it did not catch us unprepared.

As MWIT had been using its own online LMS system for the past 10 years to manage its teaching program, record student attendance and grades, our teachers were somewhat familiar with digital education management tools and this made our implementation of the Google Education Suite in the beginning of the pandemic progress smoothly. This transition was also made easier thanks to the plan the school already had in place to upgrade its digital technology infrastructure and hardware. When the first closure occurred in March 2020, MWIT was well prepared to face the coming challenges.

Another reason MWIT was able to respond quickly to the crisis is due to our position as a public organization. Our school board has the authority to identify problems and immediately implement appropriate solutions. The flat structure of our organization, comprised of only three layers, our board, management team, and staff, allowed us to redesign our curriculum and teaching practices as soon as we realized that the COVID-19 pandemic was going to turn into a mid to long-term event. Thanks to the efficiency of our school management and the adaptability of our teachers and staff, after the first school lockdown, we were able to transition to a full online mode by redesigning our curriculum and pedagogies in only two months.

In evaluating MWIT's response to the pandemic and the resulting school closures, we must factor in the forward-thinking mindset of our team which helped the school to successfully deal with the problems we faced. From very beginning of the pandemic, the school decided to see the school lockdown not as a disturbance, but as a disruption, an opportunity to totally rethink our approach to learning. Our school board had already recognized the benefits of a hybrid learning system and how asynchronous and synchronous lessons could meet Thailand's future educational demands and it was this thinking made it easier for the school to get teachers on board and help them realize that the only option was to move forward and regardless of future developments, we wouldn't be returning to pre-pandemic teaching methods.

*“If you can't fly then run, if you can't run then walk, if you can't walk then crawl, but whatever you do you have to keep moving forward.” Martin Luther King, Jr.*

MWIT did not just instill the mindset of “no way back” in our staff, we also showed them clearly in which direction the school was heading and this helped them to build the confidence they needed to invest in learning new skills. By making the decision to move to a full online mode earlier in March, there was enough time for training our teaching staff in the required skills needed for online learning.

As we entered our second academic year, the number of COVID-19 cases in Thailand continued to rise rapidly and we assumed MWIT would be in full online mode for the whole academic year. Starting with that prediction, we moved away from focusing on traditional school protocols and details and instead, prioritized our students’ learning outcomes. The shift from conventional assessments was hard for some teachers to accept at first, and convincing them to come up with alternatives to traditional midterm and final exams took some effort. However, teachers soon realized the difficulty of organizing online exams and therefore started to use more formative assessments which better suited the new timetable and online learning format.

In mid-June 2021, Thailand was hit with a third wave of infections, a record number of cases were reported in many provinces and the government enforced an even stricter lockdown which affected not only our students and teachers but support staff as well. Previously, in order to maintain social distancing, we had support staff coming to the school to work on a rotational basis in order to handle all administrative documents that required hard copies. This was no longer possible with the latest lockdown. But with this new disruption, came further opportunity, a new set of rules that allowed us to use a sender’s email and/or digital signature in electronic files to replace their traditional signature on school documents. This was a chance for us modernize our existing document filing system and develop a new digital system. This change would affect all supporting staff and their work processes. We immediately organized a training session on the new procedures and made sure our staff was ready to handle the shift to the new system. Thanks to a concerted effort by all parties involved in the process, the new procedures were implemented smoothly.

### Looking forward to the next decade

Experts participating in an Institute for the Future workshop held in March 2017 [ITFT 2017] estimated that around 85% of the jobs that today’s learners will be doing in 2030 haven’t been invented yet which makes the famous prediction that 65% of grade school kids from 1999 will end up in jobs that have yet to be created seem conservative in comparison. The World Economic Forum [WEF 2021] and other institutes now believe that the COVID-19 pandemic has accelerated society’s digital transformation and we are living in a VUCA world. This makes it more difficult for us to prepare our

young generations for an unknown, difficult-to-predict future. As the Organization for Economic Co-operation and Development stated in their OECD Education Framework 2030, “we need to prepare students to transverse time and space” [OECD 2019a]. Not only do students need to live and work globally, they also need to be able to learn, unlearn, and relearn in order to adapt themselves to the rapidly changing world of the future.

This is true not only for students, but in a world relying more and more on artificial intelligence, augmented reality, and virtual reality, educators also need to rethink how they should adapt to the digital economy. It has been pointed out that the traditional public-school system was designed to supply workers for factory work during the industrial revolution. Public schooling was seen as a very efficient way of providing a set body of knowledge to the same student groups in a way that resembled an assembly line in the factories the students were destined to work in. The emergence of the age of digital technologies and knowledge in the 1990s created a demand for knowledge workers and this has led to the current demand for creative workers. If our education system is to meet these needs, it must continually reinvent itself to adapt to the ever-changing job market and new economy. However, we must avoid the traps that failed many education technologies in the past, “New Technologies, Old Pedagogies” [Reich 2020]. We need to reinvent our pedagogies to match not only the new technologies but also the new generations.

According to a McKinsey report, students have started transitioning from Gen Z (1995-2010) to Gen Alpha (2010-), a completely digital native generation [McKinsey 2020]. The arrival of Gen Alpha has brought with it the largest generation gap in education we have experienced. Starting with Baby Boomer/GenX who are now working in top ministry levels and as school principals all the way down to Gen Alpha in the elementary schools, there are 3-4 generation gaps between the leaders who make education policy or administer schools and the ones who are on the receiving end of these policies. Within the classroom, we are now seeing a reverse literacy gap with students possessing higher literacy levels in digital technology than their teachers. Teaching and learning has become more complicated since there is a clear divide in cognitive styles, social values, and ways of thinking between the generation that grew up with smartphones and the one who was accustomed to an analog world.

With all of world’s information at our fingertips, learning in the next decade will become more personalized, in terms of both subjects of interest and learning pace. The OECD explored possible developments in education in the next decade and came up with four scenarios, “Schooling extended, Education outsourced, Schools as learning hub, and Learn-as you go” [OECD 2019b]. Except for the most conservative prediction, “Schooling extended”, all three other scenarios predict sweeping changes in school, the schooling system, and the role of teachers. With online and remote learning becoming the norm, the necessity of physical buildings is questioned. Online learning platforms and advances in digitalization could disrupt the existing school system, accelerate individualized learning and profoundly

affect the role of teachers. Teachers in the future must be prepared for a world in which they are no longer seen as the sole source of knowledge, they should instead be prepared to facilitate learning and curate the learning menu for their students. There are still many uncertainties as to which direction the future will evolve, but changes are inevitable.

MWIT is now starting to move from a traditional classroom to a more flexible timetable and curriculum. Our 2018 curriculum has been designed to focus on outcome-based learning, with more than 20% of the courses designated as electives. Students can take online courses or do internships which will be counted as credits for elective courses. The new curriculum shifts the focus of assessment from content to learning outcomes which are composed of skills and attitudes in addition to subject knowledge. From the experience we gained during this pandemic and the subsequent school lockdowns, we started to realize that not all learning needs to occur in the classroom. There are some things that are better learned outside and students should be given the freedom to learn at a time and pace that suits their individual needs. The COVID-19 pandemic has given us the chance to test and fine-tune our new teaching and learning model. We have learned that when it comes to online learning, variations in subjects and learning topics, means that using a one-size-fits-all approach is inappropriate and ineffective. We found that it is essential to receive frequent feedback from our students to help us shorten the learning curve we faced in determining the proper online learning model for each subject and its overall learning outcomes. In parallel with this, we started to develop our own MOOC in order to customize our online platform to best suit our needs. The final online platform will be used both internally and as a service to other learners from outside schools in the future.

### Lessons learned

The challenges we faced in the past 18 months have taught MWIT valuable lessons about how to change and adapt to the new education landscape created by the development of digital technology and accelerated by the COVID-19 pandemic. We have realized that in order to cope with crisis and change in a timely manner, people with authority need to be as close to the problem as possible. The prolonged pandemic's effect on our education landscape has shown us that when a system is disturbed long enough, it will reach a new equilibrium. And finally, we learned that in a highly volatile situation, merely reacting to problems as they arise is not enough, we must be proactive and plan for change before disruption occurs.

The road ahead will be full of uncertainties and difficulties, but providing a better future for our young generation is our only option. MWIT will continue to reinvent itself to meet the challenges ahead and best suit the needs of our students by maintaining its focus on continual improvement and forward motion.



Lastly, we would like to express our sincere thanks to the MWIT school board committee, who kindly accepted our numerous ad hoc requests for changes to our curriculum and pedagogy in a timely manner. We are also very grateful to our staff who patiently endured many calls to change their work processes and learn new skills to better serve our students. And finally, we must acknowledge the valuable feedback and support we received from students and parents which enabled us to adapt our procedures to best meet their needs during this difficult time.

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