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# E-Learning Experience: Malaysia Case During COVID-19 Pandemic

# تجربة التعليم الإلكتروني: حالة ماليزيا خلال جائحة كوفيد 19

# L'E- éducation: l'expérience de la Malaisie pendant la pandémie COVID-19

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**ملخص:**

تهدف هذه الدراسة إلى تحليل والكشف عن مقومات نجاح التجربة الماليزية في التعليم الإلكتروني خلال جائحة كوفيد19، والذي يعد انعكاسا طبيعيا للاستثمار الأمثل في العناصر المادية والبشرية، إلى جانب مواكبة التطورات المختلفة وعلى رأسها الثورة الرقمية (تكنولوجيا المعلومات والاتصال)، وتستعرض هذه الدراسة الأدب وتعطي الخلفية العلمية للدراسة من خلال مراجعة بعض المساهمات التي قدمها مختلف الباحثين حول مفهوم التعلم الإلكتروني، ولا سيما استخدامه في التعليم والتعلم في المؤسسات التعليمية.

وتوصلت هذه الدراسة أن ما ميز تجربة التعليم الماليزية خلال جائحة فيروس كورونا لم يكن اتخاذ القرار المباشر للتحول إلى التعلم الإلكتروني، فمعظم دول العالم اتخذت نفس الخطوة، وإنما وجود بنية تحتية للتعليم الإلكتروني وكأنها معدة لظروف مثل هذه.

**الكلمات المفتاحية:** التعليم الإلكتروني، تكنولوجيا المعلومات والاتصالات، ماليزيا، كوفيد19.

**Abstract:**

This study aims to analyze and reveal the ingredients for the success of the Malaysian experience in e-learning during the Covid 19 pandemic, which is a natural reflection of the optimal investment in the material and human elements, as well as keeping pace with various developments, especially the digital revolution (ICT). This study reviews the literature and gives the background the scientific study of the study by reviewing some contributions made by various researchers on the concept of e-learning, especially its use in teaching and learning in educational institutions.

This study found that what distinguished the Malaysian education experience during the Coronavirus pandemic was not the direct decision to switch to e-learning, but rather the presence of an e-learning infrastructure as if it was prepared for such circumstances.

**Keywords:** E-learning, Information and Communication Technology (ICT), Malaysia, COVID-19.

**Résumé:**

Cette étude vise à analyser et révéler les ingrédients de la réussite de l'expérience malaisienne en e-learning pendant la pandémie COVID 19, qui est le reflet naturel de l'investissement optimal dans les éléments matériels et humains, en plus de se tenir au courant des différents développements, en particulier la révolution numérique (technologies de l'information et de la communication). Cette étude passe en revue la littérature et donne le contexte L'étude scientifique de l'étude en passant en revue certaines des contributions apportées par divers chercheurs sur le concept de e-learning, notamment son utilisation dans l'enseignement et l'apprentissage dans les établissements d'enseignement.

Cette étude a révélé que ce qui distinguait l'expérience éducative malaisienne pendant la pandémie de coronavirus n'était pas de prendre la décision directe de passer à l'apprentissage en ligne, mais mais plutôt la présence de l''infrastructure e-learning comme si elle était préparée pour de telles conditions.

**Mots clés**: e-learning, technologies de l'information et de la communication, Malaisie, COVID-19.

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**Introduction :**

E-learning is one of the most important concepts and modern technologies for education at all levels, and this type of education has become an important pillar of the knowledge economy. It is worth noting that e-learning, or what is sometimes called distance learning or online learning ; does not mean teaching the curricula and storing them on CDs, but the essence of e-learning is the interactive style, as it means the existence of mutual discussions between students and each other, and interaction with the lecturer, there is always a teacher who communicates with the students, determining their tasks and tests.

The development of e-learning in Malaysia started during the pre-e-learning era when the Educational Technology Division was set up by the Ministry of Education in 1972 (Chai & Poh, 2009, p. 237). To keep pace with the growth of e-learning education, in 1999 the Malaysian government has embarked on a nationwide project to connect schools where students and teachers teach and learn in a virtual learning environment. Massive resources have been channeled into equipping over 10,000 primary and secondary government schools nationwide with 4G internet connectivity and a cloud-based virtual learning environment known as FROG VLE. The FROG VLE is the government's initiative to leverage ICT usage in all its primary and secondary schools in Malaysia. The previous initiative, to increase ICT usage in schools was known as the Smart Schools' project (Cheok et al, 2017, p. 20).

Also, The rapid growth of technologies and wide availability of the internet in various places have encouraged many universities to start incorporating e-learning in their educational system. For example, Universiti Teknologi Malaysia has started implementing e-learning in their educational system since 1997 that allows the lecturers to post the class schedules, course outlines, and lecture notes for the students online2 and in the following year, 1998, e-learning was implemented in Universiti Tun Abdul Razak (UNITAR). UNITAR was initially a virtual university; however, it eventually has to change into hybrid learning due to the incapability of the Malaysian IT infrastructure to support it and due to the lack of knowledge of virtual university among the intended learners. Another university that takes great importance on e-learning is the OUM, which is the first open and distance learning institution in Malaysia. The educational system in OUM offers e-learning, face-to-face tutorials, and self-managed learning (Azhari & Ming, 2015, p. 251).

In 2003, a study by Multimedia University showed that 65% of the universities in Malaysia provide e-learning and the main reason for this implementation is due to the flexibility provided by e-learning (Hussin et al, 2009).

With Covid-19 virus infections continue, governments throughout the world are still scrambling to adapt to and adopt conditions leading to a new normal in their countries. The education sector is one that has been most impacted by the pandemic. To overcome this, the education sector in Malaysia has opted for the approach of online learning or e-learning with technology and devices as a mediator of communication to replace face-to-face learning. This is currently the most popular alternative solution to contain the spread of Covid-19, as Malaysia adopted remote education technology for elementary, middle, secondary, and university students, after it decided to suspend studies, starting from April 2020, as part of the prevention measures against the Coronavirus. In this context, we try to answer in this paper the following question: **What are the efforts and measures taken by Malaysia to implement e-learning?**

The importance of this study lies in the importance of the subject of e-learning, which is the focus of attention by countries in light of the Coronavirus, and e-learning certainly needs requirements and conditions to achieve the desired successes, and therefore knowing the secrets of success leads to success itself.

Therefore, this study focuses on presenting a theoretical framework for e-learning, definition, benefits, recent trends, and challenges, also presenting Malaysia's experience in e-learning and the steps followed during the Coronavirus pandemic.

**1-E-learning: a theoretical framework.**

Technological progress has led to the emergence of modern educational methods and means that depend on employing technological innovations to achieve better effectiveness and efficiency of education, to provide learning throughout the day and for those who want it and in the place that suits it, through various methods and methods to provide educational content with static and moving visual elements and audio effects, which makes education more interesting and enjoyable and more efficient and with less effort and time, and this is what is now known as e-learning.

**1-2- E-Learning – Definition.**

The term e-learning comprises a lot more than online learning, virtual learning, distributed learning, networked, or web-based learning. As the letter “e” in e-learning stands for the word “electronic”, it would incorporate all educational activities that are carried out by individuals or groups working online or offline, and synchronously or asynchronously via networked or standalone computers and other electronic devices (Chitra & Raj, 2018, p. 11).

The term e-learning can also be defined as "a multimedia support for the learning process using modern information tools and communication technologies which are usually implemented through computer networks" (Jurík, 2021, p. 11).

E-Learning is learning via the Internet and multimedia within the framework of cognitive development and implementing creative and reproductive cognitive and metacognitive (reflective) activities (Arpentieva et al, 2020, p. 48).

Also, the European Commission (2001) describes, e-Learning as the use of new multimedia technologies and the Internet to increase learning quality by easing access to educational services as well as distant exchanges and collaboration (Arkorful & Abaidoo, 2014, p. 398).

Based on the above, e-Learning is a form of learning by media via the Internet in a way that interacts with learning content and is designed based on teaching approaches.

**1-2-The main distinguishing features of e-learning.**

There are a group of distinctive features of e-learning, including: (Arpentieva et al, 2020, p. 49)

- the availability of computer literacy for both students and trainees within the framework of cognitive development and implementing creative and reproductive cognitive and metacognitive (reflective) activities;
- translation of the content of the studied subjects (including practical skills) into electronic form, i.e. the creation of electronic textbooks, use of modern information and computer technologies, including the Internet, to ensure effective interaction of all participants in the learning process within the framework of cognitive development and implementing creative and reproductive cognitive and metacognitive (reflective) activities;
- creation phased improvement of scenarios and models of using e-learning tools in various subject areas within the framework of cognitive development and implementing creative and reproductive cognitive and metacognitive (reflective) activities;
- knowledge and understanding of Internet ethics as the main medium of e-learning within the framework of cognitive development and implementing creative and reproductive cognitive and metacognitive (reflective) activities.

Several opportunities are essential for the organization of the educational process in secondary and higher education: the possibility of active development of professional competencies of students; raising the level of educational potential and the quality of professional and general education; effective organization of independent research activities; the introduction of new forms and technologies of organization of cognitive activity of students; personality-oriented nature of learning,

allowing to take into account the individual characteristics of the student; increasing social and professional mobility of students.

**1-3-Advantages or Benefits of E-learning**.

The adoption of E-learning in education has several benefits, and given its several advantages and benefits, e-learning is considered among the best methods of education. Some of the advantages that the adoption of e-learning in education, obtained from the review of literature includes the following (Arkorful & Abaidoo, 2014, p. 401):

- the adoption of e-learning provides the institutions as well as their students or learners the much flexibility of time and place of delivery or receipt of according to learning information.
- E-learning enhances the efficacy of knowledge and qualifications via ease of access to a huge amount of information.
- It can provide opportunities for relations between learners by the use of discussion forums. Through this, e-learning helps eliminate barriers that have the potential of hindering participation including the fear of talking to other learners. E-learning motivates students to interact with other, as well as exchange and respect different point of views. Elearning eases communication and also improves the relationships that sustain learning.
- E-learning is cost-effective in the sense that there is no need for the students or learners to travel. It is also cost-effective in the sense that it offers opportunities for learning for the maximum number of learners with no need for many buildings.
- E-learning always takes into consideration the individual learners' differences. Some learners, for instance, prefer to concentrate on certain parts of the course, while others are prepared to review the entire course.
- E-learning helps compensate for the scarcities of academic staff, including instructors or teachers as well as facilitators, lab technicians, etc.
- The use of e-Learning allows self-pacing. For instance, the asynchronous way permits each student to study at his or her own pace and speed whether slow or quick. It, therefore, increases satisfaction and decreases stress.
- Quick delivery of lessons, E-Learning is a way to provide quick delivery of lessons. As compared to the traditional classroom teaching method, this mode has relatively quick delivery cycles. There are some of the reasons why the learning time is reduced by e-Learning (Chitra & Raj, 2018, p. 12):
  - ✓ Lessons start quickly and are also wrapped up in a single learning session. This enables training programs to easily roll out within a few weeks, or sometimes even days.
  - ✓ Learners can define their speed of learning instead of following the speed of the whole group.
  - ✓ Saves time as a student does not need to travel to the training venue. You can learn in the comfort of your place.
  - ✓ Students can choose to study specific and relevant areas of the learning material without focusing on each area. For example, they can skip certain areas they do not want to learn.

Less impact on the environment As e-Learning is a paperless way of learning, it protects the environment to a lot of extents. As per a study done on eLearning courses, it has been found that distance-based learning programs consumed around 90% less power and generated 85% less amount of CO2 emissions as compared to traditional campus-based educational courses. With eLearning, there is no need to cut trees for obtaining a paper. Thus, eLearning is a highly eco-friendly way of learning (Gupta, 2017).

**1-4-E-learning Forms.**

There are various forms of e-learning, including (Arpentieva et al, 2020, pp. 48-49):

- **E-learning, managed by the learner**, is the transfer of educational knowledge to independent students (autonomous or self-directed learning). As a rule, the content of courses consists of interactive information posted on the server. In this case, the student within the framework of cognitive development and implementing creative and reproductive cognitive and metacognitive (reflective) activities is completely independent.
- **Guided e-learning courses**, in addition to content in an interactive environment, the system contains the means of collaboration between a teacher and students within the framework of cognitive development and implementing creative and reproductive cognitive and metacognitive (reflective) activities. Assignments are issued by hanging on the discussion forum, where students post assignments. This form is suitable when trainees cannot work as part of a hard schedule.
- **E-learning, managed by a teacher (instructor)**, It is an analog of the traditional form of conducting classes on a schedule, but at the same time, the interaction of the process participants takes place in the information and communication environment based on the Internet within the framework of cognitive development and implementing creative and reproductive cognitive and metacognitive (reflective) activities.

All these training modes use not only text files, but also multimedia tools for presenting video and audio information within the framework of cognitive development and implementing creative and reproductive cognitive and metacognitive (reflective) activities. A mandatory element is also a means of monitoring and control of the course of training, which allows ensuring a high level of student learning.

According to the e-learning system abroad (in Germany, France, Great Britain, India, China, Turkey, United Arab Emirates, Netherlands, and many others) and in the CIS countries there are numerous open and virtual universities, which today already constitute a significant competition to traditional education.

### 1-5-E-Learning Platforms:

- **Moodle**: is a learning platform originally designed by Martin Dougiamas (the first version of Moodle was released on 20 August 2002). Moodle, as a robust open-source e-learning platform, was used and developed in the next years by the global collaborative effort of the international community. Moodle is designed and continuously improved to provide educators, administrators, and learners with a single robust, secure and integrated system to create personalized learning environment (Benta et al, 2014, p. 1171). As of October 2010, it had a user base of 49,952 registered and verified sites, serving 37 million users in 3.7 million courses. Moodle has several features considered typical of an e-learning platform and can be used in many types of environments such as in education, training and development, and business settings. Some typical features of Moodle are: Assignment submission, discussion forum, files download, grading, Moodle instant messages, online calendar, online news and announcement, online quiz, and Wiki (Wakasa, 2012, p. 24) .
- **Sites**: is a structured wiki and Web page creation tool offered by Google. The declared goal of Google Sites is for anyone to be able to create simple web sites that support collaboration between different editors (Mijwil, 2020, p. 10) .
- **Classroom**: is a free web service developed by Google for schools that aims to simplify creating, distributing, and grading assignments. The primary purpose of Google Classroom is to streamline the process of sharing files between teachers and students (Mijwil, 2020, p. 11).
- **Blackboard:** is a course management platform that allows instructors to interact with students and put their classes on the Internet without having to be experts in web development. It helps instructors to upload copies of handouts and presentations to quizzing students on what they've learned. It also allows lecturers to calculate student grades and putting them online, Blackboard lets you easily create an electronic companion to your course (Wakasa, 2012, p. 24).

**1-6-Current trends in e-learning.**

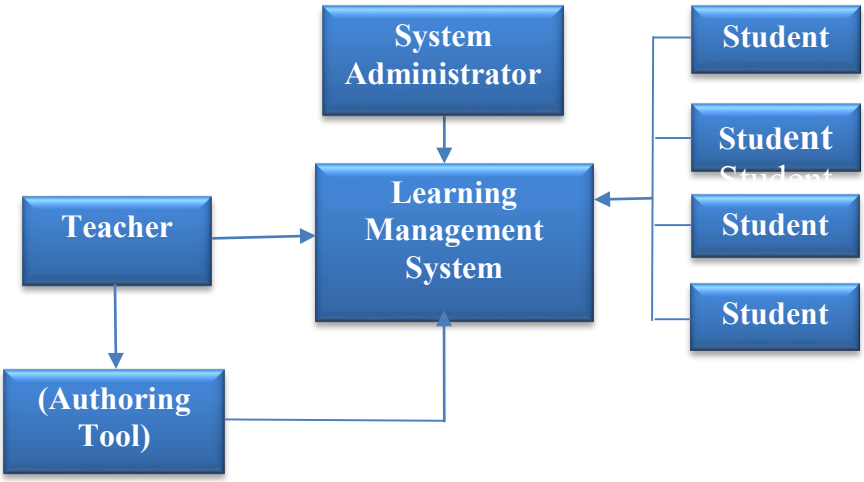
In the field of e-learning, several trends can be observed at present. These trends include, in particular (Jurík, 2021, pp. 2-5):

- **Mobile-learning** – one of the biggest trends in the area of e-learning is related to the increasing popularity of mobile information and communication devices such as laptops, tablets, mobile phones, smartphones, iPods, etc. These devices allow their owners to be constantly connected with the outside world using telephone calls, e-mails, social networks, online discussions in real-time, discussion forums, video conferences, web conferences, various portals, and so on.
- **Creating multiplatform web applications** – in the area of e-learning, we can see a gradual reduction in the use of flash applications and their replacement by HTML5 applications that can run on all platforms, devices, and web browsers. Flash-based applications often cause problems on mobile devices, while HTML5 is more versatile, faster, and more robust. Thanks to HTML5, developers no longer need to create native applications depending on a particular operating system, but just to develop one multiplatform application available via the internet.
- **The responsive design of e-learning applications** – in the context of mobile e-learning, the term responsive design is often used today. An e-learning course based on the responsive design principle automatically adjusts the size of the window in which it is running to the screen size of the device (for example notebook, tablet, smartphone, and so on) and the actual resolution of its screen. Thus, the system can automatically change the placement of images, texts, and individual layouts so that the e-course displays neatly on practically every device. As a result, all participants can view the content of the e-course without any problems, regardless of whether they are using a mobile or a static device. Inappropriate placement of images, videos, and graphic banners can cause a "spillage" of the individual text blocks so that the visual display of the content of the course could be chaotic. Thus, the goal of the responsive design is to compensate for the differences between mobile and static e-learning.
- **Usage of computer games** - educational computer games are a great way how to gain knowledge entertainingly. We can create various interactive tests, crossword puzzles, quizzes, simulations, etc. Computer simulations can be used in many areas such as agriculture, logistics, aviation, meteorology, health, natural science, transport, military, and many others.
- **creation of personalized e-learning courses based on interactivity** – another trend related to the creation of e-learning courses is personalization, respectively individualization of education. The course should be designed to fit the individual needs and requirements of its participants as much as possible. Personalization is closely related to interactivity. Interactivity allows individual participants to choose their way in the e-learning course. It is appropriate to split the curriculum into several chapters or lessons of an appropriate scale that are interconnected through a web of hyperlinks associated with individual topics of the curriculum.
- **Video-based learning –** development, and dissemination of the internet and a gradual increase in transmission rates are closely linked to the development of video conferencing and web conferencing. A video conference is a form of audio-visual communication of a certain number of people at various geographically remote locations through the use of information and communication technologies. Depending on the technology used for the transmission of the audiovisual data, special hardware and software may be needed. The software requires installation in the form of a client application on the computer of every participant and this software must be compatible with the operating system which is running on the individual computers.
- **Development and improvement of LMS applications** – another trend in the area of e-learning is the development and gradual improvement of LMS (Learning Management System) applications. An LMS application is a software tool designed for the simple and convenient creation of e-learning courses. Usually, it is only needed to provide the learning

content itself and there is no need to program anything when using an LMS. Thanks to this, e-learning courses can be created directly by the lecturers themselves and there is no need to involve IT, specialists, in the process of the creation of a course.

- At the Learning Management System (LMS). Teachers, learners, and system administrators all have access to this system but with different objectives, to ensure that the system operates and/or teaching practices take place effectively (Hoang & Quang, 2011, p. 07).

**Figure 1: E-Learning System Model.**




**Source**: (Hoang & Quang, 2011, p. 07)

To create and manage a learning course, the teacher, other than working directly on the Learning Management System, must use tools for developing learning content (Authoring Tools) to design and develop a learning course. The teacher must also have it packaged using standard protocols (usually referred to as the SCORM standard) and sent to the Learning Management System. In some cases, the content may be designed and developed directly without authoring tools. The systems that can do so are called LCMS (Learning Content Management Systems).

**1-7-Disadvantages of E-learning**.

The disadvantages of e-learning that have been given by studies include the following (Arkorful & Abaidoo, 2014, p. 403):

- E-learning as a method of education makes the learners undergo contemplation, remoteness, as well as lack of interaction or relation. It, therefore, requires a very strong inspiration as well as skills with to the management of time to reduce such effects.
- Concerning clarifications, the offer of explanations, as well as interpretations, the e-learning method might be less effective than the traditional method of learning. The learning process is much easier with the use of the face to face encounter with the instructors or teachers.
- When it comes to improvement in communication skills of learners, e-learning as a method might have a negative effect. The learners. Though might have excellent knowledge in academics, they may not possess the needed skills to deliver their acquired knowledge to others.
- Since tests for assessments in e-learning are possibly done with the use of proxy, it will be difficult, if not impossible to control or regulate bad activities like cheating.
- E-learning may also probably be misled to piracy and plagiarism, predisposed by inadequate selection skills, as well as the ease of copy and paste.
- E-learning may also deteriorate institutions' role socialization role and also the role of instructors as the directors of the process of education.
- Also, not all fields or disciplines can employ the e-learning technique in education. For instance, the purely scientific fields that include practical cannot be properly studied through e-learning. Researchers have argued that e-learning is more appropriate in social

science and humanities than the fields such as medical science and pharmacy, where there is the need to develop practical skills.

- E-learning may also lead to congestion or heavy use of some websites. This may bring about unanticipated costs both in time and money disadvantages.

Despite the great technological development that the education sector is witnessing in various parts of the world, e-education still suffers from a negative view towards it that places it at a lower level than traditional education, and in many cases the reasons depend on the absence of face-to-face education in it, forgetting the importance of self-education and the development it achieves a student in this field.

Also, many companies in the labor market do not take the scientific competence based on e-learning certificates with the same seriousness that they deal with certificates coming from universities of traditional education, which causes a great problem for many graduates of this field to this day.

**2-Malaysia's experience in e-learning.**

The economic and social growth achieved by Malaysia was due to the educational policy produced by Malaysia, which placed the individual in the first place and took care of him, and made his investment a goal for education. Malaysia realized that the introduction of the causes of the Renaissance begins with the individual. And that human capital is the basis and focus of development. Therefore, I have given education utmost care. It has ensured that its approaches are based on development needs. Which contributed greatly to raising the capabilities of the Malaysian people and increasing the production capacity of the Malaysian individual.

Article 28 of the Convention on the Rights of the Child states that every child is entitled to receive compulsory primary education. Malaysia has amended the Education Act, 1996 (Act 550), and has called for compulsory primary education for 6 years to Malaysian citizens between 6 to 12 years old. Considered as a second-tier industrialized country in Southeast Asia, Malaysia recorded a literacy rate of around 94.64 percent in 2017 and this number surged to 96.85 percent in the last year. These figures display that Malaysia’s population has low

Illiteracy is less than 10 percent for the entire population above 15 years old. The literacy rate among those who are 65 years and above is at 75.6 percent (Ating, 2021).

Malaysian vision 2020 includes ICT Master Plan 2001, which focus on the use of ICT in education especially in three major areas:

1. reduce the digital gap by creating awareness of ICT among students in schools.
2. ICT must be used as a teaching and learning tool in classrooms.
3. management system efficiency through ICT.

For Malaysians, most regions have access to the Internet and most citizens are technology literate, which can be defined as having the basic knowledge of handling mechanical gadgets such as a desktop, laptop, and so forth. In terms of literacy in technology, 90.1 percent of the Malaysian population is technology literate. Higher literacy in technology is caused by several factors such as internet penetration (Malaysia was the second-best across South East Asia) (CNA, 2021); development of e-commerce industry; providing technology as a prerequisite for academic needs; and other related factors. The access to the Internet in different states in Malaysia is not the same, as some remote areas such as Pahang, Kelantan, Sabah, and Sarawak do not have adequate Internet access. Among the many reasons are the low technology literacy, lifestyle, and the inaccessible location. However, even with this condition where some locations are inaccessible for internet network providers to reach, a study exhibits that for both urban and rural areas there is 92.2 % and 81.5 % technology literacy respectivel (DOSM, 2021).

**2-1-Smart School technology**

Malaysia is among the successful countries, that promoted education through ICT using smart school practices. The Malaysian government had initiated a smart school system in 1996. In every

state of the country, there are several smart schools having ICT framework for students. Ministry of education reserved almost 30 percent of the annual budget for connecting rural areas with the internet. The smart school is a learning institution that has been systemically reinvented in terms of teaching-learning practices and school management to prepare children for the Information Age.

The smart school project was implemented by the Ministry of Education (MoE), Malaysia. After the Pilot Wave and the evaluation, gaps were identified in terms of technology, infrastructure, support, and human resources. The Post-Pilot Wave focused on identifying measures to plug these gaps and ensure course correction before the smart school is rolled out to all schools in Malaysia. 'The Malaysian smart school Roadmap 2005-2020' proposed four milestones and following four waves for smart school implementation plan (Masrom et al, 2012, p. 05):

1. Wave 1– The Pilot (1999-2002): Implementation on 87 schools
2. Wave 2 – The Post-Pilot (2002-2005): Lessons learned from the Pilot
3. Wave 3 – Making All Schools Smart (2005-2010): Extending the digital transformation to all
4. Wave 4 – Consolidate and Stabilize (2010-2020) : Technology becomes an integral part of the nation's learning process.

**2-2-Smart School requirements.**

Technology alone will not make a school smart. Only improved teaching-learning strategies, management, and administrative processes, and capable, well-trained people with enthusiasm for their work can do that. However, information technology can enable the process of transforming traditional schools into smart schools. Consequently, a nation-wide system of smart schools will depend on advanced information technology at the school, district, and national levels. Technology has many roles to play in a smart school, from facilitating teaching and learning activities to assisting with school management. The Malaysian government has fully equipped the school with the following (Omidinia et al, 2012, p. 30):

- Classrooms with multimedia courseware and presentation facilities, and e-mail or groupware for collaborative work .
- Library/Media Centre with a database center for multimedia courseware, and network resources like access to the Internet.
- Computer laboratory for teaching, such as Computer Studies as a subject, and readily accessible multimedia and audiovisual equipment .
- Multimedia Development Centre with tools for creating multimedia materials and catering to varying levels of sophistication.
- Studio/Theatre with a control room for centralized audiovisual equipment, videoconferencing studio, and preview room for audio, video, or laserdisc materials .
- Teachers' Room with on-line access to courseware catalogs and databases, information and resource management systems, professional networking tools, such as e-mail and groupware.
- Administration Offices capable of managing databases of students and facilities, tracking student and teacher performance or resources and distributing notices and other information electronically .
- Server Room equipped to handle applications, management databases, and web servers; provide security; and telecommunications interface and access to network resources.

The following figure shows the features of the smart schools:

**Figure 2: Smart Schools Features.**


**Source** : (Omidinia et al, 2012, p. 31)

The Smart School Management System has a comprehensive application software system developed to facilitate the efficient and effective management and administration of resources and processes required to support the teaching and learning functions of the education institution. It is designed with a browser-based user interface and can operate both on a local and wide area network.

**2-3-E-learning in Malaysia during the Coronavirus.**

The spread of the Covid-19 virus was first identified in Malaysia on January 25, 2020. The cases reported remained relatively low until the spike in cases in March 2020, most of them linked to a religious event in Kuala Lumpur in late February and early March. Within a few weeks after the event, Malaysia became the country with the largest cumulative number of confirmed COVID-19 infections in Southeast Asia.

As a response to the "new normal" in Malaysia, new alternatives need to be devised to cope with the new environments such as propagating mass promotion of e-learning to society. It is a fact that this approach is relatively new for society and it will take some time and effort to get used to it before it becomes a norm. Under this new norm, parental expenditure inclined more towards electronic devices as a medium for home-based learning as reiterated by the government. During this moment, online learning can assist to ensure the continuity of studying. Through this unprecedented situation, numerous applications for educational purposes have been introduced as a solution for these matters such as Google Classroom, Google Hangouts, Google Meet, Cisco Webex, Microsoft Teams, and the most popular application Zoom. At the same time, there is a category of people that is unable to afford the instruments needed for e-learning such as computers, printers, broadband networks, and even a handphone. To cater to certain households' incapability to purchase these gadgets, the government introduced Kelas@Rumah, a daily television show that is available on a free-to-view television channel. Besides, the Malaysian government also took some initiative to provide 1GB free internet through selected telco companies throughout the Movement Control Order. As Malaysia moves towards a recovery curve, more research needs to be done on issues related to e-learning, as it has now become necessary to facilitate the teaching sessions during this outbreak (Ating, 2021, p. 02).

The Malaysian government has played important roles in assisting by providing the internet allowance to the B40 family and students for them to access the internet and continuing their E-learning. This allowance allows the students to get free internet access for learning (Mahiswaran et al, 2020, pp. 3-4).

However, e-learning comes with massive challenges. Firstly, the students need to have technology access as the primary indicator of online learning readiness (Kamal et al, 2020, p. 217). As students also take their learning independently, instructors may also need more time to design their content delivery effectively as learners will most definitely be facing technical and adapting difficulties. Highlighting a report from UNESCO reported that over 87% of the world's student population from more than 160 countries were impacted by the lockdown. In Malaysia, this unprecedented crisis has provided an opportunity to improve online education for almost 5 million school students and 1.2 million university students (Kamal et al, 2020, p. 217).

The following are the steps taken by the Malaysian countries in the transition from face learning to e-learning in Malaysia:

**TABLE 01.** Method For The Transition From Face To E-Learning in Malaysia.

| Function | Method | Applications software |
|---|---|---|
| **Teaching delivery** | Lectures can be pre-recorded then uploaded (offline) or streamed live (online). | ZOOM Cloud Meeting, Youtube |
| **Assignments and evaluation** | Students upload their quizzes or assignments online. | Socrative, Google Docs |
| Peer interaction | Group discussions and projects are conducted online. | Google Hangouts Meet, Microsoft Teams |
| **Learning resources sharing** | Learning materials are shared in a digital learning environment through a learning management system (LMS) | Blackboard, Google Classroom, Moodle Cloud |

**Source** : (Kamal et al, 2020, p. 217).

In addition to the above, during the Coronavirus pandemic, Malaysia has taken an interest in open online training courses (MOOCs), as these courses in Malaysia are a very recent development. The first Malaysian higher education institution announced its MOOC pilot offer in March 2013. In 2014, five higher education institutions – four of them public universities and one, i.e. Open University Malaysia (OUM), a private open and distance learning (ODL) institution – began offering MOOCs on two different platforms. At the moment, these initiatives represent a preliminary phase in MOOCs, where Malaysia's approach can be described as exploratory, focusing less on reaching the widest possible audience, making a significant mark globally, or competing with established providers like Coursera, edX, and Udacity, but more on learning to use web-based technology to complement current educational delivery systems at the higher education level and introducing MOOCs to the general Malaysian audience (Fadzil et al , 2015, p. 1).

There are seven key lists related to MOOCs development in Malaysia, are (Fadzil et al , 2015, pp. 5-6):

1. Infrastructure: Establish a dedicated independent infrastructure network for Malaysian higher education and any technology necessary for delivering globalized online learning;
2. Awareness: Launch MOOCs in subjects of distinctiveness for Malaysia, targeting 50% international enrolment, and promote MOOCs initiatives to the Malaysian public;
3. Capacity building: Improve training programs for academic and support staff to enable effective utilization of the best pedagogical models;
4. Governance: Promote online program development by establishing a national platform, shared services, and coordination of MOOCs development and building partnerships;
5. Policy: Provide implementation framework for successful deployment of globalized online learning based on international best practices; establish online learning as an integral component of higher education, with 70% of courses using blended learning by 2025;
6. Credit transfer: Establish a mechanism to allow credit transfer of courses completed by students via MOOCs and other online learning platforms;

7. Lifelong learning: Develop a common platform to enhance the utilization of MOOCs for lifelong learning.

In October 2014, Second Education Minister Datuk Seri Idris Jusoh declared Malaysia as the first country in the world to implement MOOCs for all public universities and we are also currently the only country where MOOCs are implemented at a national scale through the Government. This announcement was made about the September 2014 launch of four pilot MOOCs by four public universities (in respective parentheses), i.e: (Fadzil et al , 2015, p. 6)

- ✓ Islamic and Asian Civilisations (UPM);
- ✓ Ethnic Relations (Universiti Kebangsaan Malaysia (UKM));
- ✓ Entrepreneurship (Universiti Teknologi Mara (UiTM));
- ✓ ICT Competence (Universiti Malaysia Sarawak (UNIMAS)).

MOE has targeted 15% of all courses offered by public universities in Malaysia to be delivered via an online platform by the end of 2015 and increasing to 30% by 2020. The four institutions listed above have been tasked by MOE to coordinate and develop the official portal for MOOCs by public universities (known collectively as Malaysia MOOCs). Later last year, Datuk Seri Idris Jusoh also announced that MOE is proposing a budget of MYR500 million (USD138.6 million) to encourage this initiative under the upcoming 11th Malaysia Plan (2016-2020).

**Conclusion:**

In conclusion, Despite the Covid-19 pandemic, educational institutions in Malaysia have embarked on an unprecedented journey to find a balance between the delineated movement control order MCO regulations, and the continuation of studies for their respective students. Many have resorted to quick remedies using off-the-rack technological solutions, in an attempt to mitigate the circumstance. A number of these solutions have been argued as a new market strategy, created by the digital learning platforms providers, Perhaps what distinguished the Malaysian education experience during the Corona pandemic was not the direct decision-making to switch to e-learning or distance learning, Most of the countries of the world have taken the same step, but what distinguished this experience is the existence of the infrastructure for learning from a distance as if it were set up for a circumstance like this.

We conclude that the most important factors for the success of e-learning in Malaysia are :

- support from many stakeholders, including all agencies in the educational system;
- sufficient funds to establish and maintain smart schools;
- appropriate policies, norms, and guidelines to support the schools;
- effective and efficient administrative practices in each school;
- sufficient deployment of information technology to enable the smart schools to function properly;
- Continuing professional development for teachers, principals, and other educational personnel.

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