

## The Influence of Student Self-Efficacy towards Online Learning Engagement: A Study in Private International Upper Secondary Schools in Malaysia

(Pengaruh Efikasi Diri terhadap Penglibatan Pembelajaran dalam Talian: Pengajian dalam Kalangan Sekolah Antarabangsa Swasta Tinggi Menengah di Malaysia)

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### Abstract

This research paper aimed to inspect the influence of students' self-efficacy and online learning engagement in upper secondary private international schools in Malaysia. The 3 dimensions of students' self-efficacy were time management, technology use and an online learning environment; with the 4 dimensions of online learning engagement: behavioral, emotional, cognitive, and social. The instrument adapted from Zimmerman and Kulikowich's Online Learning Self-Efficacy Scale (OLSES) and Deng et al.'s MOOC Engagement Scale (MES) were used to collect data. The data was collected through a questionnaire in Google Forms with a six-point Likert Scale sent to upper secondary students in examining the relationship between the dependent and independent variables. Analysis of the data was done through simple linear regressions to test the significant influence of students' self-efficacy on online learning engagement. This study investigates the influence of students' self-efficacy on online learning engagement verifying a proposed conceptual model at the beginning of the research. The comprehensive model offers stakeholders a better understanding of how students' self-efficacies influence learning engagement during online learning. Subsequently, our research fills in the gap of sub-population focusing on higher secondary school students, providing acumen on the theory of self-efficacy and online learning engagement within this population.

Keywords: Student Self-Efficacy, Online Learning Engagement

## **INTRODUCTION**

From the time the Internet was used within education, it has created an option for offering online learning models, delivery methods and curriculum content modifications. From 2002 to 2006, according to Allen and Seaman (2007), the number of online enrolments to degree-granting postsecondary institutions went up by over a million students to 17.6 million enrolments, which represents about 20 percent of all post-secondary enrolments in the USA (p. 5). In secondary education in the USA in 2000, roughly 45,000 K–12 students took an online course. By 2009, Horn and Staker (2011) stated this number had risen to more than 3 million K–12 students albeit many in a blended learning approach instead of purely distance learning. Although there has been much research highlighting the benefits that came with online learning, it is not without its challenges. A large majority of secondary schools worldwide still employ face-to-face learning. However, this changed with the spread of the Covid-19 virus as a global pandemic.

Researchers observed that some students have struggled with online learning and maintaining the motivation and engagement to learn (Chiu, Lin, & Lonka, 2021, p. 187; Chiu, 2021, p. 1; UNESCO, 2020). This interpretation is made based on higher absences amongst students whilst attending online lessons (UNICEF, 2021, p. 23), lesser participation in class observed through video camera not turned on, fewer interactive questions and answers, limited “in-class” discussions, and poorer acquisition of knowledge and skill evidenced through summative and formative assessments.

## **RESEARCH BACKGROUND**

One of the most important factors in social cognitive theory, self-efficacy, is defined by Bandura as a quality that affects an individual’s judgement of him/herself and how his/her behaviour emerges, concerning his/her capacity to organise the necessary activities to carry out a certain performance and to do it successfully (Yavuzalp & Bahcivan, 2019, p. 32). Zimmerman and Kulikowich (2016, p. 180) suggest that self-efficacy is a key aspect of student motivation. Results of several research studies have shown that academic self-efficacy has a significant association with academic motivation (Kharameh et al., 2018, p. 9; Maraghi et al., 2018, p. 1). This suggests that when students have high academic self-efficacy, they are also likely to be motivated in their learning. High motivation in learning results in students being more engaged in their learning process. Student engagement, although a phenomenon that cannot be directly observed (Schlechty, 2002), is a process that facilitates learning (Turner & Patrick, 2004) and increases academic success (Marks, 2000). Given the great amount of autonomy in online learning, academic self-efficacy is anticipated to play a key influence on learners' engagement. (Breslow et al., 2013, as cited in Jung & Lee, 2018, p. 5). This research aims to find the influence of self-efficacy and student engagement in online learning, with a focus on upper secondary school students in Malaysia’s private international schools.

## **LITERATURE REFERENCES**

### STUDENTS’ SELF-EFFICACY

A key area of this research is to look at the effect a student’s self-efficacy has on the online learning engagement level. The term self-efficacy was brought into the realm of educational academia by Bandura (1977). Bandura defined perceived self-efficacy as a person’s belief that they can exercise control over their actions and thus have control over events that affect their lives (Bandura, 1994). High self-efficacy has been linked with resilience to adversity and challenges as well as improved performance and educational achievement. Boosting a general sense of self-efficacy would go a long way to render individuals to be resilient in the face of severe life stressors (Schwarzer & Warner, 2012).

Bandura (1994) provides a feasible argument on the four major psychological processes through which self-beliefs of efficacy affect human functioning. A person's perceived self-efficacy influences the self-appraisal of their capabilities. As the person sets personal goals, the degree of self-efficacy determines the type of goals set. If a person has high self-efficacy, they will set higher, more challenging goals. This in turn will improve the degree of motivation as explicit, challenging goals have been shown to enhance and sustain motivation (Bandura, 1994, p. 5). When working towards these goals, a person who believes in their abilities will see any failure or challenges as a lack of resources, time, or skill, in which there is then, a belief to rectify it. When a person sets ambitious goals, is motivated in the process, and has the coping abilities to deal with challenges, the outcome that is expected is likely to be largely positive. On the flip side, low self-efficacy would influence the expectancy of outcomes in a way that the person may avoid choosing certain pathways even if it was better as there is a lack of belief that they could achieve them. Should there be a lack of coping abilities, it causes anxiety arousal as well as stress, which may then impair the person's immunity.

In an online learning environment, there appears to be a difference in the types of self-efficacy that determines the successful outcomes in learning. However, it is agreed that a student's self-efficacy in utilizing the tools and technology to access learning is an important aspect to consider. It is difficult to differentiate a student's self-efficacy in technology use from the skills of information seeking or using the tech to interact with others. As such, it is more feasible to collectively group the self-efficacies as the ability to learn in an online learning environment where students demonstrate it by their ability to learn through a screen and to interact with peers, teachers, and course materials. This would provide a clear distinction between self-efficacy of technology use. This would highlight the student's ability to navigate using the devices and computers required for their online learning, thus identifying self-efficacies in connecting with the hardware. In an online learning environment, it is observable that students may or may not lack self-efficacy in managing their time, ensuring they can mark the start and end of their lessons as well as complete various tasks that are given whence online. Therefore, a look at the student's self-efficacy in managing their time would provide insights into their ability to navigate through different tasks set throughout the day.

Zimmerman and Kulikowich (2016) are built upon the arguments of Bandura (1977, 1986, 2012) on self-efficacy as a key aspect of motivation in learning, and more so for online learning. Online learning requires high levels of discipline, independence, and self-direction. To measure self-efficacy in online learning, Zimmerman and Kulikowich (2016, p. 180-191) developed an instrument, Online Learning Self-Efficacy Scale (OLSES). By utilising the OLSES, the researcher would be able to focus on other contexts for online learning, and not just the technical aspects of it. There is no doubt that self-efficacy for technology use would hugely benefit online learners, but it should not be the only factor that should be considered.

This OLSES consists of three subscales, learning in the online environment, time management, and technology use. These subscales were developed following interviews with experts in the field of online learning and multiple principal components analyses (PCA) performed using data from students at one multicampus university (Zimmerman & Kulikowich, 2016, p. 180-191). The OLSES is a twenty-two-item scale that has been adapted in other research for online learning self-efficacy (Heo, Bonk, & Doo, 2020, p. 1-13). The self-efficacy measures for online learning would be centered around three areas:

- Self-efficacy in the use of technology: Students who have high self-efficacy in the use of technology would be able to adapt to the use of different programs and soft wares on a gadget to replace the traditional book and board mediums.
- Self-efficacy in time management: With the student not being physically in school where a timetable and the timing of the classes dictate where a student should be and for how long before moving on to the next lesson, students are required to have self-efficacy to stick to a schedule without the nudging of the

crowd. Students who have poor self-efficacy in time management would find keeping time challenging. Students with high self-efficacy in time management would also be able to submit tasks promptly.

- Self-efficacy in an online learning environment: Students who have high self-efficacy in this area would overcome challenges in their learning environment and work around them.

### ONLINE LEARNING ENGAGEMENT

The conceptual theory of student engagement was originally derived from the traditional classroom setting of face-to-face. Although online and face-to-face learning involves different teaching strategies, the essence of learning is active engagement which is frequently associated with better academic achievement (de Barba, Kennedy & Ainley, 2016). Online learning involves the use of online platforms as a learning environment consisting of learning resources in the format of the text, audio, video, and multimedia as well as life lessons known as synchronous online learning (Hu & Li, 2017, p. 40).

Learner engagement in online learning platforms is conceptualized as having four dimensions (Deng, Benckendorff, & Gannaway, 2019). The student's online learning engagement needs to also be defined within the different areas and within the contexts defined below:

- Emotional engagement refers to both positive and negative emotional connections a student makes with the school, teachers, peers, and the course content. Positive feelings include attachment, belonging, curiosity, enthusiasm, and enjoyment whereas negative feelings could surround feeling anxious, bored and depressed which typically shows disengagement.
- Social engagement is centered on student-teacher and student-student interactions. These interactions have also been measured through self-reported participation in academic activities with peers, the quality of interactions and the willingness to invest in the creation and maintenance of relationships during the study.
- Cognitive engagement is often interpreted as the student's mental investment in learning, incorporating focused concentration and willingness to demonstrate high amounts of effort to comprehend complex ideas and master difficult skills.
- Behavioral engagement is tied to students' observable actions and their participation and involvement in online educational activities. Students who are behaviorally engaged tend to comply with school online norms and guidelines, participate in class and are involved in extracurricular activities (if any).

### INFLUENCE OF STUDENT'S SELF-EFFICACY AND ONLINE LEARNING ENGAGEMENT

The effect of self-efficacy in technology use, time management, and learning environment on learner engagement in students in a Korean undergraduate program was established in the study by Heo et al. (2020, p. 1-13). According to the research, each of these self-efficacy factors greatly affects the other, albeit in distinct ways. The results indicate that self-efficacy for technology use, which acts as a mediator between self-efficacy for technology use and self-efficacy for time management, hurts learning engagement on its own, suggesting that students may be bored or distracted by other technology platforms available, but that it has a positive impact when measured through self-efficacy for the learning environment. Self-efficacy in technology use and time management both improved self-efficacy in the online learning environment in this study. From initial observation of private international upper secondary school students in Malaysia, similar correlations seem to exist.

In another similar research, Han et al. (2021, p. 1-14) investigated the relationship between student learning engagement and self-efficacy in an online setting. The research found that self-efficacy was positively related to behavioral and emotional engagement

(Han et al., 2021, p. 5). The result of the study suggests that self-efficacy in an online learning environment positively impacts emotional engagement through increased social engagement which would enhance behavioral engagement (Han et al., 2021, p. 11). However, high self-efficacy in technology use negatively impacts behavioral engagement due to the likely fact that students may be distracted from the task at hand by other online platforms that they can access. Many students are distracted by social media accounts or online group gaming (Agarwal, et. al, p. 132-133). This is in line with the findings of Heo et al. (2020, p. 1-13).

An older study from 2012 by Sun and Rueda found an insignificant influence on self-efficacy in technology use in online learning engagements. Another study of online learning found that self-efficacy in technology use negatively relates to behavioral engagement but positively related to cognitive and emotional engagement (Pellas, 2014). In contrast, self-efficacy in the online learning environment, time management and technology use, in general, shows a significant and positive relationship with the general dimensions of online learning engagements (Kuo et al., 2021, p. 10).

Much of the reviewed literature is predominantly focused on tertiary education sparking an interest in the researcher's curiosity in applying similar investigation amongst upper secondary school students. Another trigger to the interest in conducting such research is the inconsistent findings on the relationship between dimensions of self-efficacies with dimensions of online learning engagements, but most importantly for the fact that self-efficacy, in general, plays an important role in the general online learning engagement. Based on the literature reviewed, the researcher hypothesizes that self-efficacy has a significant influence and positive relationship with online learning engagement amongst upper secondary school students.

## **METHODOLOGY**

The use of a cross-sectional approach will be used to collect data from the whole population during a specific period. Some advantages of the use of the cross-sectional approach include convenience, promptness and low expenses involved in the collection of data from the determined group population, often time-based on a questionnaire survey (Sedgwick, 2014, pg. 1). A questionnaire is a method used to engage in conversation between the researcher and respondents (Olsen & St. George, 2004, pg. 7), at the same time it efficiently obtains a large amount of data from a large sample of the population (McLeod, 2018). In this research context, the questionnaire is an instrument used in this research study referring to the data collection Google Form that is used to collect responses from respondents.

This research adapts Zimmerman and Kulikowich's Online Learning Self-Efficacy Scale (OLSES) developed in the year 2016 consists of the 3 variables - technology use, time management and online learning environment with a total of 22 items. The survey is completed online by rating each item using a six-point Likert scale - 1 poorly; six expert levels ranging from one extreme attitude to another adapting the original scale with no amendments.

The next part of the research questionnaire is an adaptation of Deng, Ruiqi; Benckendorff, Pierre; Gannaway, and Deanne's MOOC Engagement Scale (MES) developed and validated in the year 2019 consisting of 4 variables - behavioral, cognitive, emotional, and social engagement with a total of 12 items. The survey is completed online through Google Forms, rating each item using a six-point Likert scale - 1 strongly disagree; 6 strongly agree to range from one extreme attitude to another adapting the original scale with no amendments.

The Likert scale is best used to measure attitude in a scientifically accepted and validated manner (Joshi et al., 2015, pg. 397), hence the adaptation of the original measurement

linear scale is used. The six-point scale ensures participants consider and make choices more carefully than either leaning positively or negatively without a choice of neutrality which perceptions are rarely neutral (Thompson, 2018).

#### DATA COLLECTION PROCEDURE

Progressing from the pilot study, the researcher has identified ways to enhance the data collection procedure. The researcher invites students at HELP International School, KL, Johor, and Kuching to participate in the survey. This invitation email was sent to the principal of HELP International School KL to be forwarded to the sister schools in Johor and Kuching. Following there, homeroom teachers of Y10 – Y13 were asked to forward the survey form to students as Classwork on Google Classroom to give a gentle nudge to students who have not responded to the survey yet can keep students' responses anonymous. Anonymous surveys are more inclined to honest feedback and should have higher responses (Cleave, 2021).

### **FINDINGS AND DISCUSSIONS**

By utilising simple linear regression, the researcher was able to identify:

- (a) The significant influence of student self-efficacy in technology use on online learning engagement

The results of the analysis in Table 1 are about the influence of student self-efficacy on online learning engagement that was analysed using simple linear regression by Enter method. Technology use has minimal influence across online learning engagement and no significant influence on the dimension of social engagement. Heo et al. (2021), cited Junco and Cotton's (2012) and Wood et al. (2012)'s research findings and found that students often engage in multitasking using technology devices to surf the web, and social media or instantaneously during schoolwork. This possibly explains the negative influence of self-efficacy on technology use in social engagement during online lessons as students may be distracted by other online social activities.

- (b) The significant influence of student self-efficacy in time management on online learning engagement

The results of the analysis in Table 1 are about the influence of student self-efficacy on online learning engagement that was analysed using simple linear regression by Enter method. The regression statistics  $r = .722$  and  $R^2 = .521$  indicated that the time management dimension has contributed 52.1 percent to the changes in behavioural engagement. The regression statistics  $r = .701$  and  $R^2 = .492$  indicated that the integration of the online learning environment and time management dimension has contributed 49.2 percent of the changes in cognitive engagement. The regression statistics  $r = .665$  and  $R^2 = .442$  indicated that the integration of the online learning environment and time management dimension has contributed to 44.2 percent of the changes in emotional engagement. The regression statistics  $r = .742$  and  $R^2 = .551$  indicated that the integration of the online learning environment and time management dimension has contributed to 55.1 percent of the changes in social engagement. Time management has a significant influence on the four dimensions of online learning engagement with the most significant influence being on behavioural engagement ( $\beta = .654, p < .05$ ). According to Zimmerman and Martinez-Pons (1992), effective time management is evidenced through students setting specific goals and strategies to learn within the allocated time, on the other hand, poor time management reflects deficiencies in behavioural processes.

- (c) The significant influence of student self-efficacy in an online learning environment on online learning engagement.

The results of the analysis in Table 1 are about the influence of student self-efficacy on online learning engagement that was analysed using simple linear regression by Enter method. The regression statistics  $r = .701$  and  $R^2 = .492$  indicated that the integration of the online learning environment and time management dimension has contributed 49.2 percent of the changes in cognitive engagement. The regression statistics  $r = .665$  and  $R^2 = .442$  indicated that the integration of the online learning environment and time management dimension has contributed to 44.2 percent of the changes in emotional engagement. The regression statistics  $r = .742$  and  $R^2 = .551$  indicated that the integration of the online learning environment and time management dimension has contributed to 55.1 percent of the changes in social engagement. Students' self-efficacy in an online learning environment has a significant influence on cognitive, emotional, and social engagement with the most significant influence being social engagement ( $\beta = .612, p < .05$ ).

Table 1. Influence of student self-efficacy on online learning engagement (N=71)

Variable	Coefficient Beta ( $\beta$ )			
	BEG	CEG	EEG	SCG
Technology use	.050	.128	.074	-.216
Online learning environment	.077	.334*	.352*	.612*
Time Management	.654*	.370*	.358*	.409*
R	.722	.701	.665	.742
R <sup>2</sup>	.521	.492	.442	.551
Adjusted R <sup>2</sup>	.500	.469	.417	.531
F value	24.309*	21.588*	17.714*	27.410*
Durbin Watson	1.98	1.63	1.84	1.75

Note:

Significant at the .05 level

The results show that self-efficacy in creating an online learning environment significantly influences a student's cognitive, emotional, and social engagement. Of these, the influence self-efficacy in the online learning environment has on online social engagement is the greatest. This finding supports the research findings of Heo (2021, p. 10) and Han (2021, p. 8) demonstrating a significant effect of students' self-efficacy in an online learning environment on online learning engagement. Evidence to explain this may be due to the emphasis on student-centred learning (Mukhtar et al., 2020) in line with the private international schools adopting the Cambridge school's practices of teaching and learning ("The Cambridge Learner Attributes", n.d.). Aside from that, during online learning where the environment takes place in the comfort and safety of home, communicating with the student and their family about the importance of setting up a dedicated study space with the necessary resources for learning could lend itself to improving a student's cognitive, social, and emotional engagement. Several private international schools in Malaysia have produced policies for online learning by setting expectations for students to turn their cameras on, be dressed appropriately, have their devices fully charged, be ready with reading materials, not eat during lessons and other practical steps that would help ensure a suitable online learning environment is in place. This has inadvertently contributed to better online learning engagement.

Secondly, self-efficacy in time management significantly influences all aspects of a student's online learning engagement- behavioural, cognitive, emotional, and social engagement. Also, in line with Heo et al. (2021) research findings that there is a significant positive impact of self-efficacy in time management on learning engagement. The strongest influence that self-efficacy in time management had been on behavioural engagement, students who get onto online lessons on time would probably be taking notes during online lessons. This significant influence of self-efficacy in time management across

all the aspects of an online learning engagement highlights the importance of providing a structured school day for secondary students, with breaks and lunches factored in throughout the day. This would mean clarity of the start and end of a lesson with parents at home working alongside the school to support the students develop a personalised schedule that includes time for homework, revision, and self-study. Teachers could also provide a clear structure to their lessons with a fixed time allocated for explicit teaching sections, task completion, interaction and questions would provide students with the framework for developing self-efficacy in time management which would then subsequently influence their online learning engagement.

Finally, the most widely recognised factor was the influence of the self-efficacy of technology use, which has oftentimes been the key area of focus for many educators and schools to help increase student online engagement. By spending most of the time exploring and introducing students to new apps, technology functions and other techniques involving technology applications and expecting a significant increase in student online engagement, the outcomes from findings were disappointing as the degree of influence is small. Our results are in line with previous research findings (Sun & Rueda, 2012; Pellas, 2014; Heo et al., 2021), high self-efficacy in technology use had a significant negative impact on learning engagement. Students may be distracted by other online platforms whilst attending an online lesson which lowers online learning engagement (Junco & Cotten, 2012).

### **RECOMMENDATION FOR FUTURE STUDY**

Although the influences of student's self-efficacy and their online learning engagement are clearly shown in the research, a constraint is in the ability for us to determine if there exists a minimum requirement of at least a certain degree of self-efficacy in technology use before the influences of the other two self-efficacies become valid. The survey was conducted online, and the researcher reached out to schools where the students already have a decent exposure to technology use. It may be of interest to note that learners with a much lower degree of self-efficacy in technology use may show a largely different influence on the student's online learning engagement.

Further research into these areas would be purposeful and useful for practitioners. Determining the influence of self-efficacies on students with relatively lower self-efficacy in technology use would provide insights into whether the suggestions provided in this discussion would apply to schools with different degrees of self-efficacy in technology use. Policies and intervention strategies could then be directed according to the data, providing more resources and emphasis on developing a student's self-efficacy in areas where it provides maximum positive influence. Such research would inform educators of the minimal threshold of technology use support that we need to provide to each student, but more importantly also information on when it is important to pivot the focus of developing self-efficacy in technology used to something else to avoid the negative effects it has on learning engagement.

Furthermore, this study had not specifically investigated the impact of students' self-efficacy on the different types of engagement from the perspectives of specific subjects/disciplines. The influence of the different self-efficacies may be different in the different subjects of Physical Education, Art & Design, Computer Science and Mathematics. However, this research surveyed the students with a view of their entire experience online, rather than specific subjects. Each of the subjects requires different skill sets and may also measure engagement differently. Art & Design may not require as much notetaking as science whilst mathematics would inadvertently require fewer opportunities to discuss, disagree and debate as would History.

In-depth research into the degree of influence seen in different subjects would allow teachers to be more intentional in the interventions taking place for their specific subject.

With this information, a student would get more specific feedback from different subject teachers to help them develop the necessary self-efficacies. For example, developing self-efficacy in the technology use of coding software may play a significant influence on the students' ability to engage in a Computing class. Perhaps an Art & Design student may require sufficient space, lighting, and access to water in their online learning environment to allow them to engage more efficiently during online learning.

## CONCLUSION

Over the two years Covid-19 global pandemic, with the new normal of education, it is crucial to scrutinize the methods for effective online pedagogy. During the past two years, more than 1.5 billion learners across the globe (United Nations, 2020) were reported to have been forced to alter the learning environment from physical to virtually online. Over 600 upper secondary students in Malaysia's private international schools with forced online learning experiences were invited to participate in this survey, with around 70 students responding to the survey.

Many of the students lacked an online learning experience at the beginning of the pandemic and being ill-equipped puts students' learning at a disadvantage. Nonetheless, being equipped for online learning does not merely involve competencies in handling technologies, but also the skills in time management and online learning environment are needed to complement online learning engagement for the best learning outcome. As the trend of education makes its shift towards hybrid learning, stakeholders could investigate the development of improved pedagogy during synchronous learning and introduce andragogy, focusing on self-directed independent learning methods during asynchronous learning suitable for the context of higher secondary school students.

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