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Relationship Between Motivation and Learning Outcomes in E-learning among University Students in Malaysia

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Abstract
COVID-19 pandemic has impacted the entire world, including Malaysia. Facing the increasing number of cases, educational institutions in Malaysia have forced to stop operations, and e-learning is mainly practiced among students of higher education. However, E-learning is not fully utilized in Malaysia. Some problems have emerged, and these problems are closely related to learning motivation. Hence, this research intends to determine the relationship between motivation and learning outcomes in e-learning among university students in Malaysia. 379 students from Universiti Putra Malaysia were selected using simple random sampling technique in this study. Participants were requested to complete a questionnaire that included the Instructional Materials Motivation Survey (IMMS), which was specifically built for the Attention, Relevance, Confidence, and Satisfaction (ARCS) model and the learning outcomes instrument. Descriptive and inferential statistics were used to analyse the level of variables and the relationship between these variables. Findings showed that there is a significant relationship between motivation and learning outcomes (r=.588, p=.000). The study also found that attention is a greater determiner of learning outcomes.
Keywords: E-learning, Motivation, Learning Outcomes, ARCS Model

Introduction

According to the severity of the epidemic, the World Health Organization officially announced the outbreak of the coronavirus disease (COVID-19) as a pandemic on March 12, 2020 (World Health Organization, 2020). To stop the spread of the pandemic, educational institutions were obliged to stop operations. In order to allow students not to interrupt their studies and continue to achieve the learning objectives, the educational institutions introduce online education. Therefore, e- learning is mainly practiced among students of higher education (Sornasekaran et al., 2020). E-learning is a method of learning that is interactive and uses the internet to supply learning content (Paulsen, 2002), and it has been widely used in the field of education. However, E-learning is not fully utilized in Malaysia. Abtar and Ansary (2006) provides an overview of e-learning in Malaysia. Only 4% of organizations use some type of e-learning, according to a survey of 26 Malaysian organizations. Nonetheless, the majority of participants agreed that in the future, e-learning will be the preferred method.

Some problems have emerged after Malaysian universities have implemented online courses for a period of time. Students' common concerns include a lack of preparedness level, which indicates that they are not psychologically prepared, low self-motivation, poor time management, particularly in attending classes, and a lack of fundamental Information and Communication Technology abilities (Sornasekaran et al., 2020; Azlan et al., 2020; Chen & Hu, 2020). Motivation is crucial because it influences how we learn, what we learn, and how much time we want to spend learning. Promoting learning motivation is one of the most fundamental psychological ideas in education and one of the primary factors for effective instruction (Rodgers & Withrow-Thorton, 2005; Kim & Theodore, 2011). Motivation is essential in an online learning environment to keep students engaged. Students' ability to focus on a lesson can be hampered by a lack of motivation (Jeamu et al., 2008). These problems faced throughout the online class are closely related to learning motivation. Therefore, the importance of motivation cannot be overstated, and the study will concentrate on learning motivation in e-learning.

Students in online and face-to-face classes have distinct perspectives of the classroom environment and professors' support and demands, according to Mullen and Tallent-Runnels (2006). Similarly, because the characteristics of the learning environment and the dynamics of student motivation differ in the learning environment, without confirmation, researchers may be unable to claim that motivation theories developed in traditional face-to-face classrooms and other environments can be directly transferred into online learning environments. As a result, a comprehensive analysis of online learners' motivations is necessary, as well as ARCS theory's application in an online learning environment.

Becirovic (2018); Hasan et al (2010) discovered a statistically significant relationship between achievement and motivation. However, Kew et al (2020); Makhlough et al (2014) showed the correlation between motivation and academic performance is weak. ANA et al (2020) found that the students were generally negative towards learning through e-learning. Therefore, in Malaysia and in the online classroom environment, to determine the relationship between motivation and learning outcomes, more research is needed.

Given the above facts and problems on the relationship between motivation and learning outcomes in e-learning, the objectives of this study are as follows:

a) To determine the level of motivation in e-learning among university students in Malaysia.

b) To determine the relationships between motivation (attention, relevance, confidence, satisfaction) and learning outcomes in e-learning among university students in Malaysia.

c) To determine the motivational factors contributing to learning outcomes in e-learning among university students in Malaysia.

Literature Review

Learning Outcome is the ability that students want to achieve (Weinert, 2001). Conceptual knowledge and facts are classification, theory or model of knowing, and methodical knowledge is based on the application of specific discipline skills, procedures and techniques (Anderson & Krathwohl, 2001). In university course, students should learn social and personal skills as well as conceptual and methodological knowledge s. The learning outcomes were

derived using outcome-based education. This education method began as a way of directing learning and skills in the 1980s and then as a way of measured learning in the 1990s (Douglass et al., 2012). Learning outcomes are often generated and defined by faculties and managers in higher education and some of which are used to standardize curricula and learning outcomes by accreditation bodies and institutions (Douglass et al., 2012). Learning outcomes can be used by educators to judge whether or not a student was successful in their studies. A predetermined measured construct in the form of an assessment is frequently used to measure learning outcomes (Maclellan, 2004). Learning outcomes are a useful tool for assessing students' progress in online learning environments.

Motivation is a concept that influences the direction and magnitude of activity, as well as the effort required to carry out behaviour (Keller, 1983). Motivation has a tremendous influence on students' attitudes and learning behaviors in an educational setting (Fairchild et al., 2005). Motivation may be the most important factor in instructional design (Keller, 1979). Because, even if the teaching environment is well-designed, it will fail if it fails to motivate students. Children with high levels of learning motivation, according to researchers and teachers, outperform those with low levels of learning motivation in terms of engagement and effort (Keller, 1979). Because online learning is more individualized and independent, motivation is a prerequisite for effective learning (Kaya, 2002). Indeed, research on online learning settings reveals motivation and performance (Saad et al., 2007), success (Bilgic et al., 2011), and dropout rates (Vallerand & Bissonnette, 1992). These findings highlight the significance of online learning motivation. On the other hand, Newby et al. (2006) pointed out that, depending on the teaching technique, integrating technology in a learning environment offers both benefits and drawbacks for learning motivation. As a result, it is critical to investigate the role of motivation in the e-learning teaching approach.

Keller's ARCS model is a complete development of "several study domains connected to human motivation," with the goal of "helping answer issues about how to design motivation techniques into teaching to increase or maintain students' learning motivation" (Keller & Suzuki, 1988). Visser and Keller (1990) have proved the usefulness of the ARCS model. Furthermore, "the ARCS model, which is employed in over twenty countries, has weathered the test of cross-cultural application." Specific incentive schemes differ each culture, but the underlying framework of categories and the design process remains consistent" (Keller, 1999). According to the ARCS model, four concepts must be present in order to enhance learning motivation. These are the concepts of attention, relevance, confidence, and satisfaction. There are "sub-concepts of motivational features, as well as examples of ways to activate or maintain each motivational ingredient" in each concept (Keller & Suzuki, 1988). Attention implies that the designer must attract and, more significantly, maintain the learner's attention for a period of time during the teaching process. Relevance implies that learners should thoroughly comprehend why they need to study information and how the content relates to the needs of learners. The third aspect in the ARCS model is confidence, which is the level of belief that learners have in their ability to achieve their goals, and it has a substantial impact on learners' learning success. The degree to which learners feel acquired and satisfied with their learning outcomes is referred to as satisfaction (Keller, 1983, 1987). The ARCS model is employed in tandem with the instructional system design process to establish student motivational features, create curricular motivational goals, design motivating strategies, and test and evaluate them (Keller & Suzuki, 1988).

For the relationship between motivation and learning outcomes, studies have shown different research conclusions. According to the research by Afzal et al (2010), both extrinsic and intrinsic motivation have positive impact on the students' academic achievement. Using the Academic Motivation Questionnaire, Amrai et al (2011) examined the relationship between academic motivation and academic performance in 252 University of Tehran students, and the results revealed that academic motivation and academic performance were significantly positively correlated. Becirovic (2018), on the other hand, found that the relationships between motivation and performance was statistically significant in a group of 185 students. A study of 168 students discovered a link between academic achievement and intrinsic motivation subscales (Eymur & Geban, 2011). Similarly, Hassan et al (2010) demonstrated that both extrinsic and intrinsic motivation improve academic performance. However, Makhlough et al (2014) found no significant relationship between academic motivation and academic achievement in a study of 280 students. According to ANA et al (2020), 41 percent of students disagreed with the benefits of e-learning during the learning process, and 38 percent of students disagree with the use of e-learning under existing conditions. The evaluation results suggest that students, on average, have a neutral attitude toward learning through e-learning.

Methodology

The design of this study is to use quantitative research methods to study the relationship between motivation and learning outcomes among university students in e-learning in Malaysia. Respondents in this survey are Malaysian university students who use e-learning. Because Malaysia is under the lockdown of the epidemic, all universities have adopted online courses. Therefore, Malaysian university students are the research population. Considering the possibility of collecting questionnaires, this study set the location as Universiti Putra Malaysia (UPM). According to Wikipedia, the number of UPM students is 28841. Referring to Krejcie and Morgan (1970) table, with the population size of 28,841, the minimum sample size should be 379.

A 45-item questionnaire contained three sections which were Section A (demography information - 3 items), Section B (learning outcomes – 6 items), and Section C (motivation - 42 items). Section A gathered data related to gender, current education background and grade point average (GPA). Student learning outcomes were measured by GPA and Section B. Section B is the learning outcomes instrument, which assesses students' subject-specific conceptual and methodical knowledge, as well as their social, personal, and media competencies (Paechter, 2010). And the Cronbach's coefficient alpha was .61(Goh et al., 2017). Section C used the Instructional Materials Motivation Survey (IMMS) instruments to assess motivation levels using a 5-point Likert scale with four subscales: attention (12 items), relevance (9 items), confidence (9 items), and satisfaction (6 items). Keller (2010) evaluated the tool's reliability to be 0.96, and the four structures' reliability to be 0.89, 0.81, 0.90, and 0.92, respectively.

Result and Analysis

Table 1 shows that a majority of students had upper-medium and medium motivation level in e-learning among university student in Malaysia. Learning motivation is divided into four levels which are low, medium, upper medium and high in order to demonstrate the different level of motivation (Huang & Hew, 2016). The minimum overall motivation level among the

379 participants was 1.81, whereas the highest degree of overall motivation was 4.58. It should be mentioned that the average total motivation level was 3.297, indicating a favorable trend. About 32 (8.4%) of the 379 respondents were highly motivated, 112 (26.9%) were upper-medium motivated, 134 (35.4%) were medium motivated, and 101 (26.6%) were low motivated. According to the findings of the study, 73.4 percent of the 379 university students were satisfied with their e-learning experience.

Table 1. Level of Motivation

Motivation Level	Scores	Total N=379	Percentage (%)
High Level	4.00---5.00	N=32	8.4
Upper Medium Level	3.50---3.99	N=112	29.6
Medium Level	3.00---3.49	N=134	35.4
Low Level	<3.00	N=101	26.6

Table 2 shows the significant relationship between motivation and learning outcomes (r=.588, p=.000). According to Jackson (2011), this relationship was identified as moderate. The results also implied that the students with high motivation tended to obtain positive learning outcomes. The results showed the significant relationship between attention and learning outcomes (r=.546, p=.000), and this relationship was identified as moderate. The results from the Pearson's Correlation statistics analysis showed the significant relationship between relevance and learning outcomes (r=.434, p=.000), confidence and learning outcomes (r=.445, p=.000), satisfaction and learning outcomes (r=.484, p=.000). According to Jackson (2011), this relationship was identified as low positive.

Table 2. Correlation between motivation (Attention, Relevance, Confidence, Satisfaction) and Learning outcomes

	Learning outcomes	Correlation interpretation
Motivation	.588**	Moderate positive correlation
Attention	.546**	Moderate positive correlation
Relevance	.434**	Low positive correlation
Confidence	.445**	Low positive correlation
Satisfaction	.484**	Low positive correlation
****Correlation is significant at the 0.01 level (2-tailed)**		

Table 3 shows that two significant contributing factors to learning outcomes is attention (p=.000<0.05) and satisfaction (p=.000<0.05). But the most significant contributing factors to learning outcomes is attention, comparing the unstandardized B between attention (unstandardized B=.447) and satisfaction (unstandardized B=.244). The most significant contributor, attention, contributed 44.7% of the variance in learning outcomes. Satisfaction was also identified as one of the significant contributors and explained 24.4% variance in learning outcomes. Hence, in this study, attention was a greater determiner of learning outcomes in e-learning among university students in Malaysia.

Table 3. Coefficients

Variables	Unstandardized Coefficients B	Sig.
Attention	.447	.000
Satisfaction	.244	.000
a. Dependent Variable: learning outcomes		

Discussion

This study highlighted the significant relationship between motivation and learning outcomes in e-learning among university students in Malaysia, indicating that students are more likely to be motivated when using e-learning, motivated students have more motivation to learn, then they are more likely to take online courses, and active engagement makes students more likely to achieve their learning goals (Kim & Theodore, 2011). As a result, it is fascinating to use e-learning as a normal instrument in university student education. With plenty of time for reading reflection and interactions, e-learning creates a flexible learning environment, and it supports the student's autonomy, reflection, and research skill (Tam, 2000). Ho et al. (2006) found that adding more means of communication and engagement can increase student motivation. As a result, students become the centre of their own learning and acquire self-directed learning and problem-solving skills. Higher levels of independence in the learning process might increase students' confidence and satisfaction. In this situation, e-learning serves as a platform for establishing a learning society and for developing interactions between students and other parts of their education. Establishing strong connections between students and other aspects of their learning experience is a crucial part of the educational process (Aspden and Helm, 2004). E-learning has the ability to encourage long-term communication, learner-instructor and learner-learner interactions, and rapid feedback through the use of technology, all of which can contribute to high cognitive learning.

Students' reactions to the ARCS motivational design model are measured using the IMMS. In comparison to the other three components in the ARCS model, participants indicated attention as the best and relevance as the worst in the course materials, according to the Li (2015). The participants in this research also showed the similar findings. This is most likely due to a high degree of interest in the course topic among survey respondents and interviews; as a result, they maintained a comparably greater level of attention in the course, at least at the beginning. This finding demonstrates some useful information for further research. When comparing relevance, confidence, and satisfaction scores, students had high attention scores. There are numerous methods for keeping students motivated, including a WhatsApp group, email, PutraBLAST, and telegram. Embedding ARCS methods into online course emails has been shown to be useful in previous research (Huett et al., 2008). Based on the findings of this study, combined with the ARCS theory, some suggested motivational strategies for attracting and retaining students' attention can be implemented into e-learning. Provide more than one channel for content delivery to improve learning through the attention component in the ARCS model. Taking into account the learning environment and style of distance learners, the media representation of teaching materials can be integrated with text, pictures, animation, video and audio, so that learners with a variety of learning styles can find suitable media formats. According to Keller (2010), it is critical to design relevance strategies based on the needs of students. However, the backgrounds of some students can differ greatly, and these students usually have different motivations and goals for taking courses.

As a result, for learners with unusual goals for an online course, rather than pointing out the relevance to them, it is advantageous to assist them how to draw relevance from the course materials.

Conclusion

This research intended to observe motivation in e-learning among university students in Malaysia, and also to determine the relationship between the motivation (attention, relevance, confidence, and satisfaction) and learning outcomes in e-learning among university students in Malaysia. Motivation level in e-learning among university student in Malaysia showed that the majority of the students had upper-medium and medium motivation level. In studying the relationship between motivation and learning outcomes in e-learning among university students in Malaysia, findings showed that the motivation have a positive relationship with learning outcomes. The results also implied that the strength between attention and learning outcomes is in high positive relationship; the strength between relevance/confidence/satisfaction and learning outcomes is in low positive relationship. Multiple regression analyzed that attention was a greater determiner of learning outcomes in e-learning among university students in Malaysia.

The study's findings contribute to the study of online student motivation and increase the knowledge base of university online student motivation. Firstly, the results of this research will help draw a framework to analyze motivational factors related to online learning. By identifying these factors, future researchers will be able to conduct research, find out the level of effectiveness of these factors, and work hard to find solutions. For educators, the application of ARCS model in online classrooms will encourage educators to develop new online teaching strategies that enhance learning motivation. They can solve these obstacles and improve their teaching and learning processes based on the research results. Secondly, the motivational analysis of this research helps to attract students' attention and establish contact with students, thereby enhancing students' confidence and making students satisfied with positive reinforcement or rewards. This research helps to understand the relationship between studies and the level of performance and motivation of students in e-learning and help students plan their learning accordingly according to the motivation factors given in this research, so as to avoid these obstacles and learn in an effective way. Finally, after the epidemic is over, the research results can also provide evidence of new driving factors for blended education and online business education.

In this study, there are one instruments that was used to measure motivation of the students and one university as the study place which may limit its universality to a certain extent. Therefore, in future research, it could use different instruments to measure the same variables in current research, and the future research should involve participants from different universities. And researchers may concentrate their efforts on applying the ARCS motivational strategies to the test in an experimental study to see what influence they have on learner retention in e-learning. This study just serves as a starting point for further investigation into learners' reactions to the course using the IMMS in e-learning.

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