The Relationship Between Academic Engagement in Moocs and Self-Regulation Learning Strategies

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Abstract: Massive Open Online Course (MOOC) is among the innovations in online learning environments that attract a significant interest among students but they have a high drop rate. Due to MOOC's high attrition rates, this study investigated the relationship between academic engagement in MOOCs and self-regulation learning strategies. The correlation method was used for this research. Questionnaires of academic engagement (Reeve and Tseng, 2011) and self-regulated learning strategies (Pentrich and De Groot, 1990) were used. An online survey was embedded at the end of MOOCs with enrollments asking for learners' voluntary participation in the study. The survey results from 295 participants indicated that there is a positive and meaningful relationship between cognitive, metacognitive strategies, and motivational beliefs with academic engagement in MOOCs. In addition, Self-regulated learning strategies and motivational beliefs were able to explain 41% of the changes in academic engagement. the findings highlight the critical need to enhance self-regulation learning strategies in MOOCs. This study should be extended to investigate practical ways to encourage MOOC learners to adopt learning strategies.

Keywords: Academic Engagement, Moocs, Self-Regulation Learning Strategies, Moocs Completion Rate.

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Introduction

With the advent of the Internet and rapidly developing information and communication technology, learners and practitioners of education found applicable grounds equipped with advanced and new learning environments to conquer complex issues and conditions (Noroozi et al., 2018). MOOCs stand for Massive Open Online Courses

and are accounted for a state-of-the-art form of ICT use in education that permits hundreds of thousands of students to access online courses anywhere around the world and typically free of charge (Jung & Lee, 2018). Yuan & Powell (2013) described that the core purpose of these courses is to provide opportunities for public instruction and free access to the academic training of all instruction-seeking applicants. MOOCs as courses with barely difficult, unlimited and no-cost requirements. MOOCs create unhackneyed opportunities for innovation in education that not only will champion institutions to configure and implement the core values of academic education, but rather can shift the focus from traditional lectures to inclusive-oriented learning in education; therefore, it can be more effective if one considers the instructional quality and principles of these emerging courses (Badali et al, 2020).

A review of research shows that many MOOCs still do not adhere to pedagogical principles and that students' learning experiences are suboptimal (Mackness et al, 2010; Milligan et al. 2013). Margaryan et al (2015) state that there is still not much empirical evidence to confirm the effectiveness of MOOCs on learning, as well as the reason for the low quality of the educational design of these courses, but there can be various arguments; For example, MOOCs designers and instructors may lack the knowledge of educational design principles and contemporary learning theories, or maybe they try to implement the same common methods of teaching face-to-face classes in the MOOCs platform. Some studies have shown that the principles of educational design are not paid enough attention to (badali et la, 2018; Margaryan et al, 2015). In addition, the most important problem of MOOCs is the low completion rate of the course (Badali et al, 2022).

Over the past years, millions of internet users have been taking online classes offered by MOOC platforms (Nurhudatiana & Caesarion, 2020). Despite the high number of enrollments in MOOCs, over %90 percent of enrollees never finish the course (Narayanasamy & Elçi, 2020). From 2016 onwards, the issue of attrition rate and retention in MOOCs has become a major research trend in online education (Zhu, Sari, & Lee, 2018). Dalipi, Imran, and Kastrati (2018) found that three main factors predict learners' dropout in MOOCs including (1) learner-related factors (e.g. lack of motivation, lack of time, Insufficient background knowledge and skills), (2) MOOC-related factors (e.g. course design, feelings of isolation and the lack of interactivity, hidden cost), and (3) other factors (e.g. casual enrollment, peer review) Goopio and Cheung (2020) in a systematic review stated that various factors such as vague course design, lack of interaction, learner experience, time management, and mastery of MOOC course language affect the persistence in MOOC.

Academic engagement can have a direct relationship with MOOCS completion rates (Guajardo et al, 2019). Academic engagement includes behavioral, emotional and cognitive dimensions (Linnenbrink & Pintrich, 2003). The Behavioral dimension refers to observable academic behaviors, such as effort and persistence when facing problems while doing homework and asking for help from professors or peers to learn and understand the course material. The emotional dimension of conflict refers to the student's emotional reactions in the course. emotional engagement includes internal an interest in the content and homework, valuing the content, the presence of positive emotions and the absence of negative emotions such as frustration, anxiety, and anger when doing homework and learning (farhadi, 2016). Cognitive engagement includes all kinds of processing processes that

students use to learn and consists of cognitive and metacognitive strategies (Saber & Sharifi, 2013). Recently, academic engagement has attracted the attention of researchers and educators due to its comprehensiveness in describing students' motivation and learning, and also as a strong predictor of student's performance, progress, and success (Lam et al, 2016). In both traditional and online learning, student engagement is a crucial aspect of learning (Khalil et al., 2017). Archambault et al (2009) identified that student engagement can be used as a forecasting element for dropout in schools. In MOOCs, researchers and educators consider academic engagement as the main theoretical foundation to intervene and understand possible dropouts, improve positive performance, and encourage the completion of an educational goal (Joksimovic et al., 2018).

One of the variables that can be related to academic engagement is self-regulation learning (SRL) strategies (Sun & Ruedam 2012; Merino-Tejedoet al, 2016). SRL is the meta-cognitive, motivational and behavioral involvement of students in their learning process. SRL means the capacity of a person to adjust his behavior according to the conditions and changes of the external and internal environment, and it includes the ability of a person to organize and self-manage his behavior to achieve various learning goals, and it consists of two components: motivational strategies and learning strategies (Zimmerman, 1990). Students can actively control the learning process by using SRL strategies such as planning learning activities, self-motivation, organizing, repeating, self-monitoring, and evaluating their learning (Artino & Stephens, 2009). The relationship between self-regulated learning and academic engagement has been theorized under the social cognitive view that self-regulated learning is acquired through a triadic interaction between three important characteristics: a) self-observation (monitoring one's actions) seen as the most important of these processes; b) self-judgment (evaluation of one's performance), and c) self-reactions (one's response to performance outcomes; Zimmerman, 1989). More importantly, this view postulates that learning is not merely a fixed trait, but can be influenced and improved to achieve successful academic outcomes (Zimmerman, 1989). Students may use a variety of cognitive and metacognitive strategies as part of their behavior (Broadbent & Poon, 2015).

Many studies show a low completion rate of the course (badali et al, 2022, Goopio & Cheung, 2021; khan et al, 2021) this problem can be improved by increasing academic involvement (Guajardo Leal et al, 2019), paying attention to SRL has been emphasized by many studies (Reparaz et al, 2020; Guo et al, 2022). However, there is a research gap in the field of the relationship between academic engagement and SRL. Therefore, to fill this research gap, this research was conducted with to determine The relationship between academic engagement in MOOCs and SRL.

Methods

This study was conducted on the ATA MOOCs platform and "teaching skills" course. According to the purpose of this research, it was an applied study, and in terms of data collection and analysis, descriptive and correlational methods were used. To achieve the purpose of this research, data was collected by distributing a set of questionnaires related to two variables.

First, the research questionnaires were designed on the Google Docs platform and the link was provided to the participants in the teaching skills MOOC. After reviewing the questionnaires, out of 412 participants in the MOOC, 278 were included in the analysis as the final participants. Before answering the questions of the questionnaires, the participants were asked to write their personal information such as name, gender, age and level of degree (The information in Table 1). In addition, these teachers were told that their information will remain confidential and will only be used for this research. Table 1 shows the demographic information of the samples.

Table 1. Characteristics of the Participants

Items	Categories	Number	Percentage
Gender	Female	174	58.98
	Male	121	41.01
Age in years	<25	47	15.93
	25-30	115	38.98
	30-35	105	35.59
	>35	28	9.49
Level of degree	Undergraduate	143	48.47
	Master	119	40.33
	Ph.D	33	11.18

Measures

Academic Engagement : The academic engagement questionnaire was designed by Reeve and Tseng's (2011), which has 22 items and four components of agency engagement (Items 1 to 5), behavioral engagement (Items 6 to 10), emotional engagement (Items 11 to 14), and cognitive engagement (Items 15 to 22). Agentic engagement is defined as 'students' constructive contribution to the flow of the instruction they receive' (Reeve & Tseng, 2011, p. 258). This subscale comprises 5 items related to students' contributions during the teaching and learning process. behavioral engagement (5 items) measures students' attempts to learn and participate in activities (Mameli & Passini, 2017). The emotional engagement is made up of 4 items that estimate students' desire and like to learn and involvement in-class activities.

The cognitive engagement includes eight items and investigates 'students' use of significant information-processing strategies in learning' (Mameli & Passini, 2017, p. 532). The scoring of this scale is on a 5-point Likert scale from 1 (completely disagree) to completely agree (5). Reeve and Tseng's (2011) used Cronbach's alpha coefficient to check the reliability of this tool and it was 0.82 for agency engagement, 0.94 for behavioral engagement, 0.78 for emotional engagement and 0.88 for cognitive engagement. in the present study, the scale's reliability was also measured by the alpha coefficient formula and showed to be strong (alpha = 0.91).

Self-regulation strategies : To measure the amount of SRL, the MSLQ self-regulated learning scale prepared by Pentrich and De Groot (1990) was used. The scale has 47 items and is arranged into three main components: motivational beliefs (25 Items), cognitive strategies (13 Items), and metacognitive strategies (9 Items). The items of this questionnaire are five-point Likert tests, including (I completely disagree, I disagree, I have no opinion, I agree, and I completely agree) and points 1, 2, 3, 4, 5 were considered for each option. Pintrich and DeGroot (1990) used the factor analysis method to check the validity of the tool and used Cronbach's alpha for reliability, and the results showed that their reliability is between 74 and 83. In the present study, Cronbach's alpha for motivational beliefs, and cognitive and metacognitive strategies were obtained in the order of .91, .89 and .94 which showed strong reliability.

Data Analysis

In this research, the data were analyzed using SPSS-23 software at a significance level of 0.05. to analyze the research data, Pearson correlation and regression methods were used.

Findings

The results of Table 2 show that there is a direct and significant relationship between self-regulated learning strategies and academic involvement in MOOCs. The results show that the total score of SRL has the highest correlation with academic engagement (r=0/53), then the components of metacognitive strategies (r=0/44), cognitive strategies (r=0/40) and motivational beliefs (r=0/38), in the order of their relationship with academic engagement, are significant and direct. To predict academic engagement based on SRL, multiple regression analysis was used in a step-by-step method (see Table 3).

Table 2. The Correlation Coefficient between Research Variables

Row	Variables	1	2	3	4	5
1	academic engagement	1				
2	motivational beliefs	0/38**	1			
3	cognitive strategies	0/40**	0/55**	1		
4	metacognitive strategies	0/44**	0/60**	0/66**	1	
5	SRL (total)	0/53**	0/61**	0/65**	0/66**	1

The results show that all components of SLR significantly predict academic engagement in MOOCs. The result of examining the coefficient of determination showed that a total of 41% of academic engagement in MOOCs can be predicted through SLR.

Table 3. Multiple Regression Coefficients for Predicting Academic Engagement in MOOCs

Variables	β	t	Sig

Fixed coefficient	-	9/67	0/001
motivational beliefs	0/32	10/11	0/001
cognitive strategies	0/34	10/67	0/001
metacognitive strategies	0/39	12/21	0/001
SRL (total)	0/47	14/32	0/001

Conclusion

This research was done with to determine relationship between academic engagement in MOOCs and SLR. The results of the research showed that there is a positive and significant relationship between SLR and academic engagement in MOOCs, and it is possible to predict the academic engagement of learners in MOOCs based on SLR. This result is in line with the previous findings (Sun & Ruedam 2012; Merino-Tejedoet al, 2016; Yu et al, 2016) indicating that self-regulation as an active process can increase academic engagement. Self-regulation is an active and organized process in which learners choose goals for their learning and try to regulate and control their cognition, motivation, and behavior (Cole et al, 2011). A self-regulating student is a person who uses cognitive and metacognitive strategies and a sense of self-efficacy to achieve the goal in the best way, in harmony with his talents and abilities. Such a person shows high enthusiasm in different emotional, cognitive and behavioral fields and as a result can increase academic involvement in MOOCs. In MOOCs, where the most important problem is the low rate of course completion (Badali et al. 2022), SLR can also affect the course completion rate by increasing academic involvement in MOOCs.

The limitation of this research was not using the mediator variable and carrying out the structural equation model. Therefore, it is suggested to develop a structural equation model in future research using the role of a mediator variable to predict academic engagement in high school. Based on the results of the research, to the officials and those interested in the implementation of MOOCs, it is suggested to pay attention to SLR to optimize the effect of MOOCs by increasing the completion rate of the course.

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