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ONLINE SELF-REGULATED LEARNING: THE RELATIONSHIP BETWEEN MOTIVATION AND ACADEMIC ACHIEVEMENT

(Research Article)

Barış Çetin [a] [1]
[a] *Çanakkale Onsekiz Mart University, Faculty of Education, Çanakkale, TURKEY*

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Abstract

The aim of this study was to assess the correlation between university students' Motivated Strategies for Learning Questionnaire (MSLQ) total scores and sub-factor scores, including "Test Anxiety", "Metacognitive Self-regulation", and "Self-efficacy", as well as their Online Self-Regulated Learning Questionnaire (OSLQ) total scores and sub-factor scores, including "Goal Setting", "Environment Structuring", "Time Management", "Help Seeking", "Task Strategies", and "Self-evaluation", in relation to their academic achievements. The research employed an explanatory correlational design. The participants in the study consisted of 14 undergraduate students attending the Elementary Education program at a university in the southeastern United States. The data were collected using the OSLQ developed by Barnard et al. (2009), the MSLQ developed by Pintrich et al. (1991), and a "Demographic Form". No significant relationship was found between university students' OSLQ total scores and sub-factor scores, MSLQ total scores and sub-factor scores, and their Grade Point Average (GPA).

Keywords: Online self-regulated learning, motivation, GPA, university student.

[1]Corresponding author (Barış Çetin). ORCID ID: https://orcid.org/0000-0003-4416-8000
E-mail: bcetin@comu.edu.tr

1. Introduction

1.1. Online self-regulated learning

Self-regulated learning encompasses abilities such as comprehending information, assimilating knowledge, reflecting on acquired knowledge, and evaluating it (Bandura, 1977; Bandura, 1986). Additionally, self-regulated learning pertains to the internalized process of orchestrating one's own thoughts, emotions, and behaviors, strategically planned and continually adjusted in a cyclical manner to attain individual objectives (Zimmerman, 2010).

Students with self-regulated learning skills are self-starters who are aware of their thinking processes while engaging in learning and possess the ability to control these processes. They can motivate themselves when their motivation wanes and demonstrate active and willing engagement throughout the learning process (Mclnerney, 2011). Furthermore, they exhibit high levels of self-efficacy in self-regulation, enabling them to tackle complex problems and be more attentive in their tasks (Bandura, 1997; Pajares, 1996). They seek help when needed, take responsibility for their actions, and demonstrate competence in problem-solving (Zimmerman, 1996).

Students with high self-regulation competence are aware of their ability to make progress in academic subjects and are confident about it (Bandura, 1993). Self-regulation practices play a significant role in selecting appropriate strategies, assessing knowledge and comprehension levels, correcting errors, and implementing cognitive strategies in online learning environments. Individuals who have confidence in their self-regulated learning abilities do not give up when facing challenges and instead, strive to overcome them (Bandura, 1993).

Self-regulated learning skills have a crucial impact on the efficient implementation of online learning. Various definitions of online learning have been proposed in the literature. Some of these definitions include the utilization of online communication networks within educational contexts, encompassing activities such as course sharing, facilitating educational projects, conducting research, gaining access to resources, and fostering collaborative efforts within groups (Harism, 2017).

Terms commonly used for online learning include internet-based learning, e-learning, networked learning, distance learning, virtual learning, computer-based learning, and web-based learning (Ally, 2008). Online learning specifically involves the use of the internet and the web. It requires access to a computer and the internet to participate in the course, allowing students to take classes without the need for face-to-face attendance (Bates, 2005).

Online learning can be used to determine learners' needs and current expertise levels, as well as to assign appropriate materials that help them achieve desired learning outcomes (Ally, 2008). It fosters the development of process skills and knowledge creation while supporting collaborative group activities (Thiessen and Ambock, 2008). Online learning allows instructors to flexibly design and review course content, offering opportunities to create video or audio presentations (Anderson, 2008). Moreover, it provides learners with a multifaceted learning environment experience (Mupinga, 2005).

Synchronous online learning facilitates real-time interaction between students and instructors

(Ally, 2008). The characteristic of synchronous online learning is that instructors and students can log in during specific time frames and at their convenience (Hodge-Zickerman et al., 2021). The majority of the content is delivered online, allowing students to participate in classes from anywhere. Real-time online meetings are part of this type of learning, enabling students to log in from different locations simultaneously (Martin et al., 2020; Martin and Oyarzun, 2017). Synchronous online learning environments typically consist of live video and/or audio conference sessions with simultaneous participation from students and instructors (Finkelstein, 2006). On the other hand, asynchronous online learning primarily delivers content online, giving students the opportunity to access the online course from anywhere and at any time, without face-to-face meetings (Martin et al., 2020). Additionally, asynchronous online learning allows students to access materials at their convenience (Ally, 2008).

Online learning heavily relies on students' autonomous and active participation, as well as their self-regulated learning skills (Broadbent and Poon, 2015). Having self-regulated learning skills is crucial for students in online learning environments (Jonassen et al., 1995; Mou, 2021). Self-regulated learning (SRL) is significant for learners in online learning environments that offer high levels of student autonomy and low levels of teacher presence (Lehmann et al., 2014). Researchers agree that online learning provides students with opportunities for flexible work and more active involvement in their learning (Hung et al., 2010; Waschull, 2001).

Successful online learners are often defined as those who possess self-regulated learning skills (Artino and Stephens, 2009; Dabbagh and Kitsantas, 2005). Individuals with self-regulated learning skills demonstrate higher performance, greater satisfaction with the course, and more effort in their online learning environments (Cho and Heron, 2015). Self-regulated learning is considered a critical component of successful online learning (Lehmann et al., 2014; Azevedo, 2009; Zimmerman, 2008; Zimmerman and Campillo, 2003; Won You and Kang, 2014).

1.2. Motivation

Motivation generally refers to the set of factors that initiate, direct, and sustain behavior towards a specific goal. The term "motivation" finds its roots in the Latin word "movere," signifying "to move" (Huffman, 2012).

Motivation plays a significant role in learning, influencing what, when, and how we learn, as well as being a crucial factor in the emergence of performance (Schunk, 1991; Pintrich and Schunk, 2002; Schunk and Usher, 2012). Observational learning is influenced by motivation because students who believe that knowing models is beneficial tend to emulate such models and strive to retain what they have learned from these models (Schunk, 1987).

The most crucial aspect regarding motivation is its mutual relationship with learning and performance; as a result of this relationship, motivation influences both learning and performance (Schunk, 1991; Pintrich, 2003). The relationship between motivation and willpower cannot be overlooked. Even if willpower, i.e., self-regulation, has been depleted by previous actions, high motivation allows individuals to effectively engage in self-regulation (Baumeister and Vohs, 2007). Mega et al. (2013) found positive effects of self-regulated

learning and motivation on academic achievement. Heikkila and Lonka (2006) observed a low positive correlation between overall academic performance and self-regulated learning.

Online students with self-regulated learning skills are capable of creating a productive work environment, possessing positive motivational beliefs about their abilities, the value of learning, and factors influencing learning (Artino, 2008). Self-regulated learning (SRL) is a critical higher-order skill necessary for 21st-century students to become lifelong learners, adapting to ever-changing environments (Pérez-Álvarez et al., 2022). Developing self-regulated learning goals is one of the 21st-century skills aimed at fostering self-directed, goal-oriented, autonomous, and lifelong learners (Teng and Zhang, 2020; Trilling and Fadel, 2009).

The increasing ease of accessing information through technological advancements necessitates the development of online self-regulated learning skills among university students. Additionally, it is considered important to determine the relationship levels between university students' online self-regulated learning skills, motivation levels, and GPA (Grade Point Average). The purpose of this study is motivated by the lack of sufficient research on this topic in the existing literature. The results of the research will contribute to the relevant literature, providing valuable insights into the relationships between the variables under investigation. The study aims to answer the following question: Is there a significant relationship between university students' online self-regulated learning total scores and sub-factor scores, their motivation strategies total scores and sub-factor scores, and their academic performance (GPA)?

2. Method

In this study, an explanatory correlational design was employed to determine whether there is a relationship between university students' total scores and sub-factor scores on the Motivated Strategies for Learning Questionnaire (MSLQ), total scores and sub-factor scores on the Online Self-Regulated Learning Questionnaire (OSLQ), and their Grade Point Average (GPA).

2.1. Participants

The participants of this study consisted of 14 voluntary students attending the Elementary Education Program at a university located in the southeastern region of the United States. Among the participants, there were 2 male and 12 female students studying in their second, third, and fourth years (sophomore, junior, and senior levels). The age of the participants ranged between 20 and 48.

Table 1. Descriptive statistics of the participants

Variables		N
Gender	Female	12
	Man	2
Grade Level	Freshman	-
	Sophomore	1
	Junior	3
	Senior	9

2.2. Materials

2.2.1. OSLQ: Developed by Barnard et al. (2009), this scale consists of 24 items rated on a 5-point Likert scale. The scale measures six sub-factors: goal setting, environment structuring, task strategies, time management, help seeking, and self-evaluation. The Cronbach's alpha values for these six factors in the original study range from 0.87 to 0.95 (Barnard et al., 2009).

2.2.2. MSLQ: This scale, formulated by Pintrich et al. (1991), assesses students' learning motivation strategies by employing a subset of 19 carefully chosen items from the initial 81-item Likert scale questionnaire. In this study, this scale was used to assess students' motivation strategies for learning, comprising three sub-factors: self-efficacy for learning and performance, test anxiety, and metacognitive self-regulation. The Cronbach's alpha coefficients for the three sub-factors range from 0.69 to 0.93 in the original scale. The Cronbach's alpha coefficient for the overall total score of the scale is 0.79 (Pintrich et al., 1991).

2.2.3. *Grade point average* (GPA).

The GPA (Grade Point Average) is the overall average of students' grades in all courses up to the first and seventh semesters, based on their self-reported data.

2.3. Procedure and data analysis

Before commencing this study, ethical approval was obtained from the university. The data for the research were collected from voluntary students attending a university located in the southeastern region of the United States during the spring semester of 2017. The total scores obtained from the "MSLQ" and "OSLQ" scales, along with the demographic information, were collected. The arithmetic mean of the total scores obtained from the MSLQ and OSLQ scales was calculated, and a normality analysis was performed. The analysis revealed a non-normal distribution. Therefore, the Spearman Rank Difference Correlation Coefficient, a non-parametric technique, was used for the analysis.

3.Results

In this section, the correlation results regarding the relationship between the university students' total scores and sub-factor scores on the MSLQ scale, total scores and sub-factor scores on the OSLQ scale, and their academic achievement are presented.

Table 2. *Means, Standard deviations and Intercorrelations between OSLQ, MSLQ and GPA*

		1	2	3	4	5	6	7	8	9	10	11	12
1	GPA	1,000	,325	,179	,153	,408	,009	,109	,101	-,052	,094	,102	,054
2	Test anxiety	,325	1,000	,298	,-041	,666**	-,602*	-,233	,-138	,042	,008	,040,	-,199
3	Metacog. self-reg.	,179	,298	1,000	,-,438	,545*	,174	,127	-,124	-,190	-,133	,225	-,041
4	Self-efficacy	,153	-,041	-,438	1,000	,362	-,238	-,513	,227	-,121	,147	-,258	-,169
5	Motivation tot.	,408	,666**	,545*	,362	1,000	-,302	-,362	-,011	-,252	,026	,001	-,250
6	Goal setting	,009	-,602	,174	-,238	-,302	1,000	,134	,303	,087	-021	,390	,515
7	Environment struct.	,109	-,233	,127	-,513	-,362	,134	1,000	-,006	-,008	-,241	,194	,144
8	Time management	,101	-,138	-,124	,227	-,011	,303	-,006	1,000	,483	,375	,611*	,677**
9	Help seeking	-,052	-,042	-,190	-,121	-,252	,087	-,008	,483	1,000	,472	,692**	,756**
10	Task strategies	,094	,088	-,133	,147	,026	-,021	-,241	,375	,472	1,000	,622*	,646*
11	Self-evaluation	,102	,040	,225	-,258	,001	,390	,194	,611*	,692**	,622*	1,000	,927**
12	Online SRL tot.	,054	-,199	-,041	-,169	-,250	,515	,144	,677**	,756**	,646*	,927**	1,000

* p<.05

** p<.01

According to Table 2, there were no significant correlations found between the university students' GPAs and the sub-factor scores of "Test Anxiety" [r=.325, p>0.05; r^2= 10, 5625];

"Metacognitive Self-regulation" [r=.179, p>0.05; r^2 = 3,2041]; and "Self-efficacy" [r=.153; p>0.05; r^2 = 2,3409], and the total score of the MSLQ scale [r=.408, p>0.05; r^2 = 16,6464], indicating that there was no meaningful relationship between these variables.

In a similar way, there were no significant correlations observed between the university students' GPAs and the sub-factor scores of "Goal Setting" [r=.009, p>0.05; r^2 = 0,0081], "Environment Structuring" [r=.101, p>0.05; r^2 = 1,0201], "Help Seeking" [r=-0.52, p>0.05; r^2= 27,04], "Task Strategies" [r=.094, p>0.05; r^2= 0,8836], and "Self-evaluation" [r=.102, p>0.05; r^2= 1,0404], and the total score of the OSLQ scale [r=.054, p>0.05; r^2= 0,2916], indicating that no significant relationship was found between these variables.

4.Conclusion and Discussion

The aim of this study was to determine the level of relationship between university students' total scores and sub-factor scores on the MSLQ scale, total scores and sub-factor scores on the OSLQ scale, and their academic achievement.

The results of this research indicate that there was no significant correlation between the university students' GPA and the total scores and sub-factor total scores obtained from the OSLQ scale and the MSLQ scale. This finding suggests that university students' online self-regulated learning and motivation scores did not have a positive effect on their GPA. Contrary to the expectations, the results of this study imply that motivation and high levels of self-regulated learning did not lead to better academic performance among university students. Based on the findings of the research, it can be stated that the relationship between the university students' online self-regulated learning and motivation scores and their GPA is not a significant

concept. This research's results align with other studies, such as Dai et al. (2021), which did not find a significant relationship between university students' self-regulated learning scores and their academic achievement in the online learning environment. Similarly, Özdemir (2018) did not identify a significant relationship between university students' academic achievement and their scores on the self-regulated online learning scale. Additionally, Cetin (2022) did not find a significant correlation between university students' GPA and their scores on the online self-regulated learning and motivation scales.

The outcomes of this study contradict the subsequent research findings. In a study conducted by Basila (2016), it was observed that students' academic performance in online courses exhibited correlations with their scores in self-regulated learning, motivation, and academic self-efficacy. Hector McGhee (2010) determined a statistically weak relationship between university students' asynchronous online learning interactions and their academic achievement. Homer (2022) identified a high level of correlation between perceived self-regulation and online academic achievement.

Özdemir (2018) found a significant relationship between university students' academic achievement and the time management sub-factor of the self-regulated online learning scale. Min (2012) found a significant relationship between online self-regulated learning scores and motivation scores for 73 teacher candidates who took two online technology courses. Broadbent and Poon's (2015) meta-analysis study revealed a significant relationship between self-regulated learning (SRL) strategies and online academic achievement. Drawing from the conclusions of this study, the following recommendations can be put forth:

1) Further research can be conducted with a different sample group to investigate the relationship between university students' GPA and total scores and sub-scores of the OSLQ scale, as well as the total scores and sub-scores of the MSLQ scale.

2) Qualitative research methods can be employed to explore the online self-regulated learning and motivation of university students, complementing the quantitative measurements based on the "OSLQ" and MSLQ" scales.

Declaration of Conflicting Interests and Ethics

"The author declares no conflict of interest." The researchers obtained Ethical approval from UNCW, Institutional Review Board (Decision Date: 30.03.2017, Decision Number: 17-0217).

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