Impact Of The Covıd-19 Pandemic On Academic Achievement And Self-Regulated Learning Behavior For Students Of The Faculty Of Pharmacy, Middle East University

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Abstract

This study aimed to determine the relationship between self-regulation learning behavior and academic achievement among students attending the Faculty of Pharmacy during distance education due to the COVID-19 pandemic. We found that there is a strong correlation between the variables of self-efficacy and self-regulation, cognitive strategies, and academic performance of students in the exam, while there is a negative correlation between the variable of anxiety in the test and academic performance in the exam. Among the five variables, self-efficacy and self-regulation have the strongest impact on the academic performance of students who have been taught by a distance learning method due to the COVID-19 pandemic.

Introduction

Self-regulated learning is a prominent topic among theorists, scholars, and specialists in educational psychology. Self-regulated learners can monitor their performance and define and apply appropriate strategies that enhance learning performance. Acquiring knowledge is an essential goal in the learning process, and it is defined as an organized cognitive process in which the learner is an active participant. Self-regulated learning has been recognized as an important component of academic achievement in traditional classroom learning (Schunk, 2005).

Self-regulated learning is defined as the degree to which students are metacognitively, motivationally, and behaviorally active participants in their own learning (Zimmerman &Schunk, 1989). Referring to individuals' beliefs, confidence, and expectations in their ability to accomplish a specific task, self-efficacy has been shown to impact motivation and learning outcomes (Tsai, 2012). With the growth of online education, it is increasingly important to consider Internet self-efficacy as a predictor of success in online education (Liang & Tsai, 2008).The influence of self-regulation in online learning environments has been demonstrated in recent studies (Barnard et al., 2009; Nicol, 2009).

During the COVID-19 pandemic, we find that most of the world's countries have tended to activate distance education in order to continue the educational process for all levels of education. Distance education depends on the presence of the learner in a place that differs from the place of the teacher or the source of information. Distance learning aims to attract students who cannot follow under normal circumstances to continue the traditional educational program (*Kaplan*& *Michael, 2016*). Hence, the aim of the study was to investigate the relationship between self-regulated learning behavior and academic achievement among students of the Faculty of Pharmacy during distance education during the COVID-19 pandemic.

Study questions

Is there a correlation ($\alpha = 0.05$) between the level of self-regulated learning strategies and academic achievement among students at the College of Pharmacy in clinical biochemistry under distance education?
Is there a correlation ($\alpha = 0.05$) between the level of motivation components and academic achievement among students at the College of Pharmacy in clinical biochemistry under distance education?

Theoretical background

There is no clear and simple way to define self-recognized learning as many models for self-recognized learning have been put forward, and according to the Pintrich model self-recognized learning has been defined as a purposeful and active process where learners set their educational goals and then try to monitor, organize, and control their cognitive, motivational, and behavioral characteristics and direct them towards achieving or increasing performance (Bowkaerts et al., 2000).
Many models focus on the various aspects of self-recognized learning. Most of the models focus on a general chronology (regulated time) in which all students, to reach the goal, for example, Zamirman, indicated the importance of the sequence in the process of self-regulation to accomplish a task as it begins with defining the goal and the means, considers feedback from previous learning experiences, and then makes adjustments to the goals, strategies, and subsequent means (Zimmerman, 2000).
Pintrich also presented a model of self-regulated learning (SRL), where the activities of the learning are classified into four main areas: cognitive, emotional, behavioral, and environmental context, through four phases (Bergamin et al, 2012). The four phases are: 1) Reflection and thinking: this phase includes planning, setting goals, stimulating perception and knowledge of the task and the context, and linking the self to the task; 2) Self-monitoring: The focus during this phase is on monitoring processes represented in awareness of metacognition about the various aspects of the self, the task, and the context; 3) Control: It directs efforts to control and organize the various aspects of the self, task, or context; and 4) Self-reflection: This stage includes various types of reflections and reactions related to self, task, and context.
The Pintrich model was built according to the Pandora theory of social cognitive learning. Pintrich presented his model in the form of a table or frame, which made it clear and distinct from other models, where the rows of the table formed the four stages (self-control, control, self-control and meditation) of self-regulated learning, and these are shared by many forms of self-regulated learning. The columns represent the four areas in which the organization is organized to a cognitive, emotional, behavioral, or environmental context (Pintrich, 2004).
One of the most prominent advantages of the Pintrich model is that it incorporates motivational components into self-regulated learning through a Motivated Strategies for Learning Questionnaire (MSLQ), which is a self-report tool that students use to be able to assess themselves, where the scale was divided into two parts, one of which is the measurement of motivation components. This includes three motivational elements: self-efficacy (which can be defined as students' judgments on their own abilities associated with a specific academic subject), the motivational component (the intrinsic value, which predicts students' judgments about the importance of a particular academic educational subject and their usefulness from them), and anxiety (from the test and negative feelings mean the direction of the test for students, which affects students' achievement and academic performance) (Winne & Perry, 2005; Tobias, 1985).
While the second part of the MSLQ measures learning strategies that include cognitive and self-regulation strategies. Cognitive strategies are defined by the learner in learning, remembering, and understanding, and they are summarizing and repeating, reading details and critical thinking, while self-regulation strategies mean the individual's ability to control (Pintrich et al., 1993; Siegler, 1988; Zimmerman &Marinez-Pons, 1990).
In this research, we focus on the relationship between motivation components and self-regulation learning behaviors and the academic performance of students of the College of Pharmacy at the Middle East University, Amman, Jordan, in the course of Clinical Biochemistry within the framework of distance education at the time of the COVID-19 pandemic.

Distance education is defined as the process of separating the learner, teacher, and book in the education environment and transferring the traditional environment of education from a school or university to a multi-geographically separate environment, a modern phenomenon of education that has evolved with the accelerating technological development in the world and is intended to deliver education to students who otherwise might not obtain it under traditional conditions and daily working hours (*Kaplan*& *Michael*, *2016*).

Method

One-hundred-forty-four students participated in the study in the fourth stage in the Faculty of Pharmacy at Middle East University, where 47% were male and 53% female. This study was conducted during the second semester of 2019/2020, where the students were taught via a distance education method due to the COVID-19 pandemic.

Although there are many models of self-regulated learning, we used the Pintrich model because it combines many concepts and aspects. Students answered the MSLQ questionnaire. The scale included 60 phrases divided into two parts, one of which is to measure the components of motivation that measure self-efficacy, intrinsic value, and test anxiety, while the second part measures learning strategies that measure cognitive strategies and self-regulation. Students were instructed to answer the scale according to Likert's evaluation, which ranges from 1 to 5, where 1 is not applicable at all and 5 applies strongly. The questions addressed their behavior during the performance of certain tasks in the study of clinical biochemistry. In the College of Pharmacy, where the questionnaire was applied to students at the end of the second semester of 2019/2020, where students taught in this semester by way of distance education due to the COVID-19 pandemic.

Results and Discussion

Table 1 reports the Pearson correlation coefficient between the degrees obtained by the students of the College of Pharmacy on the final Clinical Biochemistry test, where they were taught via distance education, motivation components, and self-regulated learning behaviors.

There is a strong correlation between the academic performance of students in the distance education and all variables of motivation and self-regulation, where higher levels of self-efficacy (R =0.875) and self-regulated (R = 0.744) and cognitive strategies (R = 0.734) are linked. Anxiety in the test (R = -0.256) is negatively related to the grades of students in the test, which proves that negative emotions have a negative impact on students' performance in the test.

It is interesting that students reported low levels of anxiety under distance education, and it is also interesting that the academic performance of the test is not related to the intrinsic value under distance education.

Table 1. Person correlation between motivation and self-regulated learning variables and performance.

	Self-efficacy	Intrinsic value	Test anxiety	Self-regulated	Cognitive strategy
R	0.875**	0.561**	-0.256*	.0.734**	0.774**

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

To further verify the interactions between motivational components, self-regulation strategies, and academic performance in distance education, the three motivational components (self-efficacy, intrinsic values, and test anxiety) and the two self-regulation learning strategies (cognitive strategies and self-regulation) were considered independent variables, and the degrees obtained by students in the final test under distance education as a dependent variable. Tables 2 and 3 report the results of the gradual regression analysis.

Table 2. The value of R, R Square, adjusted R Square, and Std. Error of the Estimate.

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.562	0.315	0.317	5.988

Table 3. regression analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	sig
	Beta	Std. Error	B		
Constant	78.781	5.130		15.356	0.000
Self-efficacy	5.608	0.648	0.649	8.034	0.000
Self-regulated	4.960	0.735	0.740	6.748	0.000
Cognitive strategy	4.703	0.713	0.544	6.596	0.000

The first question of the study relates to the correlation between motivational components, cognitive learning, and academic performance in distance education through correlated analysis. We show that all five components of motivation and self-regulation are linked or related to the students' performance in the faculty of pharmacy under distance education, and test anxiety is negatively related to students' performance of the final exam.

This is not surprising because the theoretical and experimental literature in the field of self-regulation emphasized the importance of self-regulation and motivation for the learner in academic performance. It is worth noting that learners with high levels of self-regulation skills tend to outperform learners with low levels of self-regulating learner skills in emergency conditions like the lockdown during the COVID-19 pandemic (Paraskeva et al., 2009).

Self-efficacy has a strong influence on the grades of students receive in the final exam. Individuals who have high expectations of self-efficacy are able to achieve the goals that they aspire to, and self-efficacy affects many of the decisions that people make in their lives. Those people who have high expectations of their self-efficacy can face challenges or even overcome failure or avoidance failure, and the high expectations affect the effort made by individuals in achieving their accomplishments. We found that distance education did not affect the level of competence of students and their beliefs about their ability to achieve their goals related to academic performance (Tsai, 2012). On the other hand, we found that in the absence of the traditional method of education, which depends mainly on the teacher and in this condition, we are going to the distance education that depends mainly on self-learning in the COVID-19 pandemic. On the other hand, we find a rise in the ability of students to use cognitive strategies because, during distance education, the student has become obliged to self-learning and that the greatest effort falls on him for the learning process to happen, and it is normal for the student to use many cognitive strategies in learning, understanding and remembering such as lesson recitation and repetition and focus in the details to be able to achieve his goals.

The results of this study provide important insights into the design and implementation of motivational and self-regulatory components in the study of college students, especially for pharmacy students. Self-efficacy, as an important motivational factor, plays an important role in ensuring increased knowledge acquisition and performance in exams.

Conclusion

Theresults of this study offer important insights into the design and implementation of motivational and self-regulated components in college student's study, especially for students of art. Self-efficacy is an important factor in motivation and plays an important role in guaranteeing increased knowledge acquisition and performance in exams.

Recommendations

Based on our findings, we recommend further studies addressing this topic. We also recommend the use of self-regulated learning as a test to discover talented students (as students with high self-regulating skills tend to grade higher than other learners), and holding courses and training programs for students to introduce them to self-regulated learning. Our data support the effectiveness of distance education for undergraduate students.

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