Determinants Affecting Student Engagement in Online Learning: Examining Teaching Styles and Students' Computer Self-Efficacy

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Abstract: Implementation of modern technologies has been suggested to enhance student learning. The purpose of this study is to investigate the determinants of student engagement in online learning with regards to teaching styles and computer self-efficacy. A descriptive cross-sectional design was employed using a survey method to collect data from 265 respondents in Jordan during the academic year 2022-2023. The results revealed that teaching styles significantly affect students' engagement in online learning while students' computer self-efficacy does not have a significant impact. As there are only a few studies on factors that negatively impact student engagement in online learning settings, this study addresses the gap in literature on online learning environments. The results provide practical information for academic administrators, computer instructors, and students. Through highlighting the interplay between the various online variables and students' engagement in Jordan, this study can assist stakeholders in designing professional development training sessions, programmes, or manuals to equip students and instructors with the necessary knowledge and skills related to integrating technology into their daily teaching and learning activities. The study recommends that future studies explore other personal, environmental and cognitive factors as well as involve larger samples of students from several public and private universities in Jordan.

Keywords: Computer, Online learning, Self-efficacy, Teaching style

1. Introduction

Recently, online learning has been adopted by many educational institutions to meet the rapid changes taking place in the learning environment. The impact of Covid-19 pandemic on daily lives has been documented worldwide, particularly in the field of education as documented by numerous studies (Abubakari, Nurkhamid, & Priyanto, 2022; Widiasih, Hermayanti, & Ermiati, 2020). The majority of these studies contended that online learning is a recourse from the education crisis, and its effectiveness along

with the promising outcomes have become topics of interest in numerous tertiary educational institutions and research (Pham et al., 2021; Jdaitawi et al., 2022; Soliman et al., 2022; Jdaitawi et al., 2022). However, it appears that online learning is not popular with everyone owing to students' limited interactions, unstable quality of sound and visual clarity and its dependence on the quality of the Internet connection and technological equipment (Pham et al., 2021).

Although the sector of education in Jordan receives considerable attention and funding, minimal attention has been given to explore factors which influence student engagement in the online mode. In this regard, engagement of students is considered to be a good predictor of higher education quality rather than an input of resource and academy reputation (Boulton et al., 2019). However, literature highlighted the importance of evaluating student engagement in online learning activities (Dwivedi et al., 2019; Basilius et al., 2022; Farooq et al., 2020; Liew et al., 2023; Nickerson & Shea, 2020).

Student engagement refers to 'students' willingness, need, desire, and compulsion to participate in, and be successful in, the learning process" (Bomia et al., 1997, p. 294). In effect, student engagement is described as the active involvement of the student in his/her learning and academic activities. In addition, the three dimensions of student engagement, namely behavioural, affective and cognitive dimension, constitute the basis of the learning connectedness of the student (Fredricks & Mc-Colskey, 2012). Despite its importance to the learning process, little research has been conducted to determine the factors that affect student engagement (Zhang et al., 2020; Wolverton et al., 2020). Hence, the present study aims to examine the underlying factors that affect student engagement. Previous studies indicated that student experience is generally with higher digital engagement levels (Preville, 2018), with some authors contending that student engagement and enthusiasm can be boosted by online instructions that facilitate different learning characteristics (Coy, Marino & Serianni, 2014; Wolverton et al., 2020). The online learning environment is also said to affect student interaction positively or negatively, i.e., prevent or open up, avenues for student engagement according to the traits of individual students (Wolverton et al., 2018). The efficiency of online learning is extensively influenced by factors such as self-efficacy and computer literacy, as well as online learning approaches (Bhuasiri et al., 2012, pp. 843-855; Wolverton et al., 2020).

Self-efficacy refers to the belief of the individual in his/her own abilities. More accurately, self-efficacy is the judgments of the individual concerning his/her capability of organizing and executing action courses needed to achieve different performance types (Bandura, 1986, p.391). The concept of computer self-efficacy is significant to the conceptualization of technology integration in the education environment. Self-efficacy has been evidenced to positively and significantly affect the students' readiness and their performance expectations (Achukwu et al., 2015; Wu et al., 2010). Students with refined and advanced computer kills have a higher tendency to perform better in learning, which in turn, maximizes the e-learning use (Bhuasiri et al., 2012; Wu et al., 2010).

Additionally, online learning structure must be based on effective pedagogical principles like students' involvement in its provision, student-teacher interaction and active learning facilitation along with educational support (Lima et al., 2020; Martin & Bolliger, 2018). The requirements for and the factors that impact the traditional approach differ substantially from those of online learning. According to Talebain (2014), for example, face-to-face education is dependent on time and place while online education reflects a more extensive environment, allowing the learner to take control of his/her learning speed, time, location and interaction with teachers and other students. Other studies, however, showed that academic achievements are better when obtained through traditional classes (Figlio, 2010, p. 2017), but not between online and traditional classes (Davies, 2018).

In the presence of such contradictory findings, there has never been a more suitable time to establish a concerted and inclusive methodology and a set of guidelines for online education. Furthermore, Gray and DiLoreto (2016) supported the idea that pedagogical strategies are needed for course delivery in online classes to provide learning opportunities and increase students' engagement. However, studies need to be carried out to provide insight into the differences brought on by course design, content of curriculum, involvement of the teaching faculty and other important influencing factors (Coates, 2009; Robinson & Hullinger, 2008; Hampton & Pearce, 2016; Redmond et al., 2018; Zhang et al., 2020).

Therefore, this paper answers the call by focusing on the different variables and their effects on student engagement in the online learning process. These variables include styles of teaching and students' computer self-efficacy. Hence the main objective of the study is to identify the various predictors of academic engagement, particularly the instructors' teaching styles and students' computer self-efficacy. More specifically the study seeks to: (1) Determine the relationship between teaching styles and students' engagement in online learning; (2) Determine the relationship between students' computer self-efficacy and students' engagement in online learning, and (3) Determine the online predictor factors in improving the engagement of students.

2. Methodology

This research examined factors influencing student engagement in online learning process in Jordanian universities. The study employed a quantitative approach, with the survey data collection method. The survey is designed to collect data about respondent's characteristics and beliefs as suggested by Creswell (2012), Jdaitawi and Ashraf (2022), and Jdaitawi (2019).

2.1 Sample and Procedure

This study focused on university students in Jordan. The sample comprised 265 students from the Faculty of Education and Social Science whose ages ranged from 18-22 years. They have been exposed to several learning instructions. The study was preceded by obtaining approval from the Ethics Committee of the various universities for the distribution of the survey questionnaire copies using a hyperlink. Data was gathered through an online questionnaire, specifically through the use of Google Forms, with the link forwarded to every department staff to be given to students from March to April 2022. Of the participants, 43.3% were male students and 46.7% were female students. 50.8% of participants were aged between 18-20 years old and 49.2% between 20-22 years old.

2.2 Study Measurements

The measurements of the variables were carried out using scales from past studies computer self-efficacy was measured using scales from Howard (2014), teaching styles scales from Alawamleh et al. (2020), and learning engagement scales from Handelsman et al., (2005) and Oraif and Elyas (2021). After the development of the study items, the scales were examined by experts for review and face validity, feedback, and recommendations. Under each scale, several items were included and ranged based on 5-point Likert scale: 5 (strongly agree) to 1 (strongly disagree). Moreover, the measurement of learning engagement adopted from Handelsman et al. (2005) and Oraif and Elyas (2021) consisted of 20 items measuring three major dimensions: 9 measurement items for skills engagement, 5 for emotional engagement, and 6 for interaction engagement. All these measurements represent the engagement of students through skills, emotions, and participation, which established an internal reliability of 0.83, Teaching styles had two major dimensions and the scales were adopted from Alawamleh et al. (2020). Specifically, there were 9 items, 5 of which were dedicated to measuring online classes and 4 measured regular classes, which established an internal reliability of 0.88. Additionally, the computer self-efficacy scale was adopted from Howard (2014), and the internal reliability value was 0.85. The data was processed for descriptive statistical analysis via SPSS.

3. Results

The results from the descriptive analysis are tabulated in Table 1. Learning engagement is the dependent variable whereas computer self-efficacy and teaching styles were the independent variables. The values of normality distribution Skewness and Kurtosis met the linear regression analysis assumptions (3-10) based on Kline's (2005) recommendations.

Table 1. Descriptive Data Analysis

Variables	Skewness	SD	Kurtosis	SD
Computer self-efficacy	.652	.157	.564	.313
Teaching styles	.491	.157	.024	.313
Learning engagement	.670	.157	.934	.313

The result in Table 2 proves the significant correlation between computer self-efficacy, teaching styles, and learning engagement (0.196, $p < .000$**; 0.278, $p < .000$**; 0.463, $p < .000$** respectively).

Table 2. Pearson Correlation Results

Variables	Computer Self-Efficacy	Teaching Style	Engagement
Computer self-efficacy	--	.196**	.278**
		.000	.000
Teaching styles	.196**	--	.463**
	.000		.000
Learning engagement	.278**	.463**	--
	.000	.000	

3. Linear Regression Analysis

This analysis determined the direct effect of the study variables based on Luo et al. (2020) criteria. Based on Model 1, the linear regression analysis results are as displayed in Table 3.

Table 3. Results of the Model

Hypothesis Paths	Path Coefficient	*t*-value	*p*-value	Result
Computer Self-Efficacy-Engagement	-.111	-1.958	0.051	Not-Supported
Teaching Styles—Engagement	.195	-2.930	0.004*	Supported

The results show that computer self-efficacy did not significantly affect the learning engagement regression model ($B = -.111$, $t = -1.958$, $p > 0.051$) and this held true for teaching styles as well ($B = .195$, $t = -2.930$, $p < 0.004$**).

4. Discussion

The study aimed at identifying the underlying factors that impact online learning for Jordanian university students. The results do not support the assumption that students' computer self-efficacy influences their learning engagement (β=-0.111, t=-1.958, p=>0.05). Past studies of the same variable yielded conflicting results with some indicating that the student's belief in his/her ability in using technology is a determinant of their engagement in technologically integrated learning environments (Tzeng, 2009).

However, other studies divulged mixed findings concerning the relationship between the study variables. While Sun and Rueda (2012) revealed that situational interest and self-regulation, but not computer self-efficacy, had significant correlations with the three engagement factors (behavioral, emotional, and cognitive), Pellas (2014) found computer self-efficacy in online courses to have a positive correlation with several student engagement aspects (cognitive and emotional). This positive relationship was also reported by Chen (2017). It appears that a higher computer self-efficacy level is linked to higher technology engagement level (Laird & Kuh, 2005). In addition, Wolverton et al. (2020) assert that a student who perceives using technology in a competent manner has the likelihood to be more willing to take online

courses and more willing to engage in the learning process. Hence, the above mentioned mixed findings need to be confirmed through future studies. Wolverton et al. (2020), stipulate that increased online course offerings call for more studies to provide insight into self-efficacy.

It is certain that teaching styles tremendously influence students' engagement (β=0.195, t=-2.930, p=<0.05). The results indicate that online learning and face-to-face modes are effective in the teaching-learning environment and in enhancing student-instructor interaction and engagement. In the current context, the teachers and students recently made use of both modes, confirming the positive relationship between teaching styles and learning engagement.

5. Conclusion

Due to the important findings of the current research, this study contributes to discerning some of the underlying factors that result in essential differences between students' success in the online learning process. Past studies explored students' experience in the process of learning (Kobb et al., 2021; Pham et al., 2021). However, gaps still exist in the literature regarding e-learning and student engagement in the learning process. The increasing rise in the use of modern technology applications and e-learning activities in the academic domain call for more effort in the higher education environment to explore issues related to learning objectives, contents of learning, processes, evaluations, and assessment of what has been learned in online learning processes (Maphalala & Adigun, 2020; Jdaitawi, 2019, 2020a, 2020b; Manzano-Leon et al., 2021; Jdaitawi & Kan'an, 2022; Soliman et al., 2022; Jdaitawi et al., 2022; Jdaitawi et al., 2022).

Based on the findings, the staff teaching style has a significant effect on the learning engagement of university students while computer self-efficacy barely impact students' engagement. This is a useful insight to be considered by teachers and course developers to evaluate ways in which courses can be structured and reviewed. The findings of the current study also contribute to the introduction of new learning possibilities that highlight students' areas of strength and align with their individual preferences.

Moreover, the findings shed light on the understanding of the academic success of the students. As for the contributions of the study, they include enabling instruction examination using online and traditional learning among university students and the examination of successful online learning predictors and their influence over the engagement of students, the latter of which remains largely untouched in literature. Thus, there remains a need to determine the top effective online learning factors that can bring about students' engagement and successful learning achievements.

5.1 Limitations of the Study and Recommendations

The findings of this study should be interpreted within the span of its limitations. The purpose of this study was to examine the determinants affecting students' engagement in online learning. The focus of this study was on online learning in terms of teaching styles and computer self-efficacy in the online learning setting. Future study may be applied to other dimensions such as learning styles, teachers and students' attitudes and assessment. The second limitation of this study is the exclusion of the characteristics of the student sample. Future study may be applied to other characteristics which need to be explore. Furthermore, the paper focus only on one higher education university in Jordan, it would be most useful if the future studies could investigate similar factors from students in universities outside Jordan. Also, the study is limited with regards to its geographical inclusiveness as only Jordanian university students were part of the sample. Future studies may be applied to other geographical areas and include other universities in other countries. Lastly, this study is limited due to its adopted data collection methodology, which is the survey questionnaire method. Future studies may opt for other methods, such as interviews and discussion groups, to collect data from the sample.

6. Co-Author Contribution

The author affirmed that there is no conflict of interest in this article. Author 1, 2,3 and 4 carried out the completion of the paper, prepared the literature review and conducted the research methodology. Authors 5,6 and 7 interpreted the findings and presented the recommendations.

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