

Exploring Connectivism through Online Engagement

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To Link this Article: <http://dx.doi.org/10.6007/IJARBSS/v11-i11/11303>

DOI:10.6007/IJARBSS/v11-i11/11303

Published Date: 22 November 2021

Abstract

Open Distance Learning (ODL) is understood as an important method to allow the lectures, lesson learnings, and information to flow freely and ideas to be the driving force of efficiency boundaryless anywhere anytime. This paper proposes a short analysis and evaluation of online engagement in ODL. The objective of the research contains three main parts of the online learning influence. The objectives cover learner-to-learner engagement, learner-to-instructor engagement, and learner-to-content engagement. Generally, the research is about exploring connectivism through online engagement based on the three major objective sections within an ODL sphere. The paper presents the quantitative survey based on male and female respondents range from high school to the highest level of education. The survey instruments include four major sections which are demographic profile, learner-to-learner interaction, learner-to-instructor interaction, and learner-to-content interaction with a total of 116 respondents. Findings, in general, show the students' interactions, preferences, behaviors, attitudes, mindsets, opinions, participations, supports, and motivations as the main factors in connectivism through online engagement. The research study can be used to reflect the effectiveness of online engagement and set as a standard framework that can be applied across universities, higher institutions, and even schools. The academicians, lecturers, researchers, and teachers can refer to this study research as a means of evaluating, improving, and enhancing their existing practices, their capabilities, and expertise to engage students through online engagement.

Keywords: Learner-To-Learner, Learner-To-Instructor, Learner-To-Content, Online Engagement, Open Distance Learning (ODL).

Introduction

Background of Study

In education, online learning platforms have surged in popularity, and it was recently determined that online learning is the most often utilised educational support resource for both teachers and students (Garg, 2020). Online learning has long aimed to provide students with an educational experience that is, at the very least, more flexible in terms of time and location than traditional classroom learning. The use of technology to gain access to learning activities is known as online learning (Rahayu, 2020). Online learning refers to activities that take place in synchronous or asynchronous settings using a variety of technologies (Dhawan, 2020).

Since 2019, the Covid 19 virus has spread to almost every country on the planet. As a result, face-to-face studying in schools and institutions is no longer practicable. The Movement Control Order (MCO) was implemented in Malaysia, as it was in many other nations throughout the world, to flatten the Covid-19 distribution curve. According to the Ministry of Higher Education, beginning April 2020, all public and private universities in Malaysia have conducted teaching and learning activities using online learning (Chung et al., 2020).

There has been relatively little research and analysis done to date to evaluate on how online learning influences the engagement between these three factors: learner to learner, learner to instructor, and learner to content among students from high school to the highest level of education. The significance of this study is to develop an understanding of how these three factors can play a significant role in reinforcing students' engagement through online learning environment.

Statement of Problem

Students at universities have expressed satisfaction with ODL's overall execution. The lecturers' encouraging initiatives in their class delivery, as well as the ODL platforms utilised, are important factors. The most popular and favoured platforms are asynchronous techniques, which allow students to replay classes at any time (Mathew, 2020). Online learning has been shown to increase discussion and collaboration activity. As a result, shy or introverted students can actively participate (Kamal et al., 2020).

Problem

Another big issue with online learning is the lack of adequate connection with teachers. Students prefer to connect with their peers via digital means and seldom encounter their peers in person. This makes real-time sharing of ideas, knowledge, and information is limited in the digital learning world (Adnan, 2020). Students who do not have or have limited socioeconomic resources to afford a broadband connection, laptop, or computer are more likely to fall behind or have additional obstacles in catching up with others in online learning (Adedoyin, 2020).

Solution

Hence, this study is done to investigate how online learning influences engagement. This study is done to answer the following questions:

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Objective and Research Questions

- 1.1.1 How does online learner influence learner-to-learner engagement ?
- 1.1.2 How does online learning influence learner-to-instructor engagement?
- 1.1.3 How does online learning influence learner-to-content engagement?

Literature Review

Introduction

Theory of Connectivism

With the emergence of the digital age, Siemen (2005) introduced the theory of connectivism . In this theory (refer to figure 1), people learn by forging new connections. This theory is built on four key principles for learning:. The principles are autonomy, connectedness, diversity, and openness. Firstly, in the online community, learning is self-directed . Learners practice autonomous learning as they hold the power or right to control their own learning activities. Secondly, connected learning is when learners pursue their interest with the support of peers, mentos and the society around them. Next, learning diversity refers to the infinite variety of experiences that the learners bring to their formal learning. Finally, openness of learning and environments allows the learning process to be more visible and inviting of critique and new ideas.

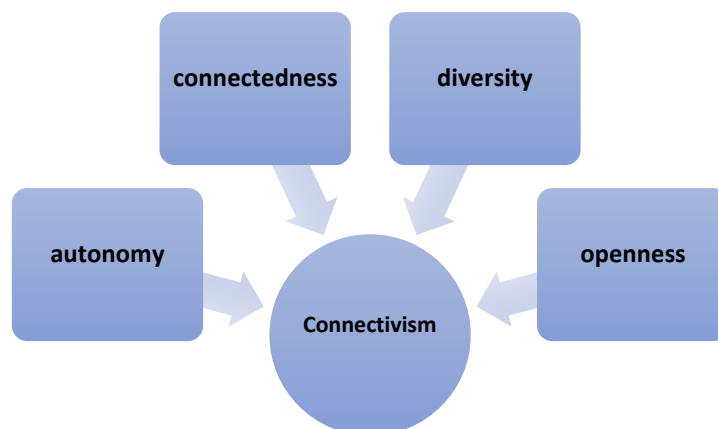


Figure 1- Connectivism (Source: Siemen, 2005)

Online Engagement (one pargar)-factors

The development of online learning and courses in educational institutions has increased dramatically due to the rapid growth of technology, internet access, the presence of high-quality digital resources, tools, and adaptive platforms. Due to the recent pandemic of the SARS-CoV-2 virus, which posed a challenge to the global education system, educators have been forced to switch to an online style of learning activities almost immediately. The changes of teaching mode started with blended learning and ended with educators having to shift

entirely to online teaching (Watson et al., 2020). Academicians and researchers, on the other hand, are worried about the lack of learner engagement during online learning where some learners feel online learning is boring and unengaging (Dhawan, 2020). Yang et al (2018) has defined engagement as what learner's act, feel and think which relates with behavioural, emotional, and cognitive in the academic world. In order to see the effectiveness of online learning in achieving learning outcomes, measures of learner's engagement are important as a useful marker in educational quality. Rothman et al (2011) has evaluated six major domains to measure learner's online engagement which includes appropriateness of readings and assignments, technological tools, instructor feedback and communication, course organization, clarity of outcomes and requirements as well as the content format. Another study done by Yang et al (2018) highlighted that course design, teacher presence, learning environment and experience, models and interrelationships between preconditions, engagement outcomes, and MOOC-related technology are among the factors used to assess online engagement among learners. To sum up, many researchers employ a set of broad criteria to assess learner engagement. In this study, three key parameters were evaluated to investigate how online learning influences engagement: communication among learner to learner to create a good learning environment, communication between learners and instructors, and the influence of course content to learners.

Past Studies

Past Studies on KW1 (learner engagement) (2-3 past studies, synthesize)

Many studies have been conducted to observe learner engagement during online learning, the benefits of collaboration in teamwork, and how to design a system that will improve student engagement.

Amin et al (2017) conducted a study to investigate these benefits, focusing on soft skills and management abilities. Their objective is to determine the correlation between students' peer engagement, academic self-efficacy, social influence, peer feedback, and collaboration, as well as anticipate the characteristics that influence students' academic accomplishment while practising online peer learning via social networks. At the same time, evaluate the factors that affect undergraduate students' academic development at Universiti Putra Malaysia (UPM). The study was a quantitative method, with a correlational design, and used a collection of questionnaires as an instrument that had been developed from past research and validated by a panel of experts. The sampling procedure is stratified. In total, 376 questionnaires were received. Social impact is the most important element, according to research, followed by collaboration, performance expectancy, peer engagement, and academic self-efficacy. As a result, this research shows that peer engagement in a digital environment is relevant and can influence academic accomplishment.

Next, Lee et al (2019) conducted research to determine the best system for online learning. 737 respondents from Korean online university students participated in their study, which aimed to establish an instrument for measuring student involvement in e-learning environments. Based on the results of the data analysis from the literature review, the instrument with 24 items was constructed after getting expert opinion, validity, and reliability analysis. Factor analyses, both exploratory and confirmatory, were also performed. Emotional motivation, peer participation, intellectual problem – skills solving, connection with instructors, community engagement, and learning management are among the six elements discovered in this study. It is intended to assist instructors and curriculum designers in

identifying variables that will increase student engagement in e-learning situations and, as a result, avoid students falling out of online courses.

Past Studies on KW2 (learner interaction with teacher)

The Covid-19 pandemic has forced many education systems to dive into the Emergence Remote Teaching (ERT) and later struggling to adapt to Online Distance Learning (ODL) despite the obvious Learner-to-Instructor Engagement (LIE) challenges and acquiescence. Many studies have been done on LIE, especially in terms of issues like (a) engagement and (b) interaction with the instructors or teachers. Past studies have reported multi-facets on the LIE in ODL. A structural equation modelling (SEM) study on randomly sampled of 4,305 respondents through online questionnaire survey to analyze the correlation between students' ODL satisfaction and engagement students' has reported that LIE has impacted on students' ODL engagement and this has positively affected students' satisfaction (Muzammil et al., 2020). This study has paved the way for future studies. Using an online survey of a random sampling technique involving 208 students, Aydin (2021) investigated ODL learners' satisfaction level involving issues of (a) interaction type and (b) effect on ODL gratification level. From the Exploratory Factor Analysis, instructor-student interaction prompted a rise of 0.186 in causal-relationship between interaction type and ODL satisfaction level (Aydin, 2021). Regardless of this impact, Aydin (2021) stressed the strongest causal-relationship of interaction type and satisfaction in ODL is in the learners-content interaction, followed by students-students interaction making learners-instructor communication the least important to achieve ODL satisfaction. This is an unsurprising find as interaction differs from engagement which may connote achievement while interaction denotes happiness thus satisfaction. Differing from Aydin (2021); Abou-Khalil, et al (2021) looked at engagement within the context of ODL effectiveness. While studying 313 students in challenged infrastructure settings using sequential mixed-methods, the researchers found learners-content engagement is undeniably the main source to ODL effectiveness. This is followed by students-teacher engagement and student-student engagement adopted strategies. It is important to note that gender and access to technology played significant roles in these findings. Implications of this study denote that adopting the right engagement strategy will impact different types of engagements, perceive effectiveness of ODL and satisfaction of ODL cannot be spilt over and lastly, either way LIE takes a second place of importance after both learner-content engagement or interaction in perceived effectiveness or satisfaction. Gleason (2021) responded to research on learners-instructor ODL interaction to include (a) type of critical support and scaffolding made available, (b) curriculum designed to support LIE interaction and (c) constant innovative competency boost among instructors.

Past Studies on KW3 (learner interaction with content/material) (2-3 past studies, synthesize)

Student-to-content engagement is the process of engaging with content intellectually, which can affect a student's understanding and perspectives (Moore, 1993). The most recent research has focused on the effectiveness of online learning as compared to traditional classroom learning. Several studies have found that rapport and engagement between students and online learning material are essential in an interactive environment. There have been many past studies on student-to-content engagement. The study by Alhammad (2021) is done to investigate challenges and learning experiences in taking online classes during the Covid-19 pandemic. Their study explores the influences on student engagement with technology and the quality of student learning using deep and surface approaches. Various

students from different academic majors were interviewed and their responses were evaluated using deductive content analysis. According to the findings, technology can improve students' participation in class discussions, and students become more knowledgeable about lecture content. The effectiveness of facilitation strategies for higher education has been done by Muir et.al (2020). Two case studies were given that demonstrated how instructors used facilitation methods in their online teaching and the impact these approaches had on student participation. The results of the study found that in support of the student's engagement in online learning, online teaching initiatives such as online announcements and emails, a variety of online content such as lecture recordings, webinars, formative quizzes, and discussion boards should be maintained. This is consistent with studies conducted by Banna et.al (2015) and Britt (2015) which stated that critical interaction can happen while watching instructional videos, interacting with multimedia, and a variety of activities to make students feel engaged more in their studies.

Conceptual Framework

The conceptual framework is illustrated in figure 2. This framework is built on Siemen's (2005) principles of (a) connectedness and openness, (b) diversity and (c) autonomy. Connectedness and openness in online learning is reflected using Martin & Bollinger (2018) learner-to-instructor engagement. Instructors play a crucial role to make sure that the online activities promote better understanding of the content of the lesson. Next, the online interaction promotes diversity through learner-to-content engagement. Through interaction with their peers, learners are able to diversify how they want to acquire knowledge and also what they can do with the acquired knowledge. Finally, engagement with the instructors helped learners develop a sense of autonomy when they are given the opportunity to make decisions to extend their learning outside the context of the classroom.

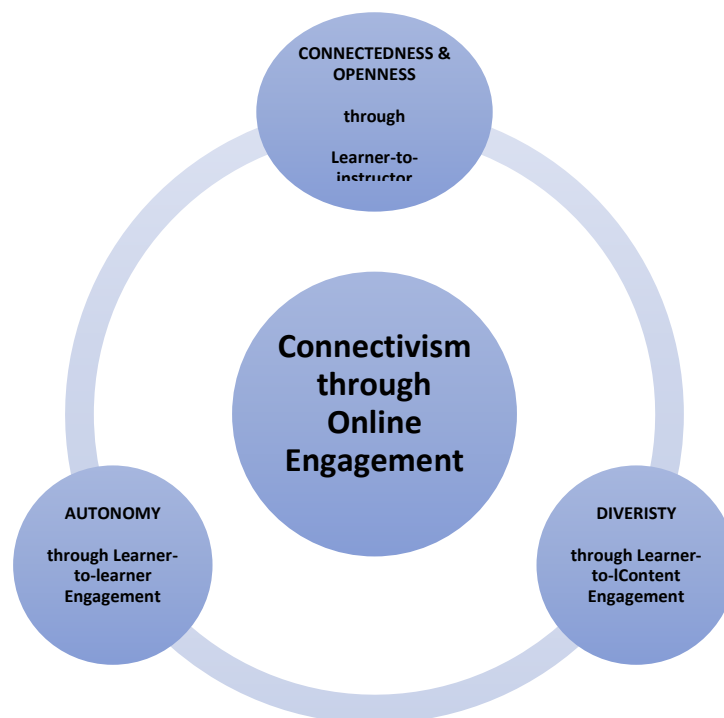


Figure 2-Conceptual Framework of the Study

Connectivism through Online Engagement
(Source: Siemen, 2005; Martin & Bollinger, 2018)

Methodology

Research Design

This quantitative study is done to explore how the theory of connectivism is portrayed when learners are allowed to engage with their peers, the instructor and also the content. 116 respondents were purposely chosen to respond to the instrument (survey). Respondents were chosen from a group of learners from several public universities who had to undergo online learning for a whole semester. The survey is divided into 4 main sections. Section A is about the respondents' demographic profile. Section b has 6 items on learner-to-learner engagement. Section C has 7 items on learner-to-instructor engagement. Finally, section D has 7 items on learner-to-content engagement. Table 1 shows the distribution of items in the survey.

Table 1
Distribution of Items in Instrument

CONSTRUCTS	SECTION		No of Items
	A	Demographic Profile	2
ONLINE ENGAGEMENT	B	Learner-to-Learner Engagement	6
	C	Learner-to-Instructor Engagement	8
	D	Learner-to-Content Engagement	8

Next, table 2 shows the reliability statistics of the instrument. SPSS analysis shows that the survey has a cronbach alpha of .886; thus showing good internal validity of instrument chosen for the study. Data is collected via goggle form. The data is presented using percentages (for demographic) and mean score for the items in the constructs.

Table 2
Reliability Statistics

Reliability Statistics	
Cronbach's Alpha	N of Items
.886	22

Findings

Introduction

(what is discussed in findings-an overview)

Findings for Demographic Profile

(a) Gender

1	Male	41%
2	Female	59%

Figure 3- Percentage for Gender

Female makes up 59%. Male students only contribute 41% to the questionnaire.

(b) Discipline

1	Science & Technology	32%
2	Social Sciences	11%
3	Business	10%
4	Others	47%

Figure 4- Percentage for Discipline

In Question 2 under demographic profile, the questionnaire distributes the question into four (4) categories under the discipline section. Based on findings, 32% students come from science & technology discipline, 11% students have a social science background, 10% students come from business studies and the majority of the students which are 47% come from other background studies.

(c) Education Level

1	Phd	1%
2	Masters	1%
3	Bachelor	24%
4	Diploma	70%
5	High School	4%

Figure 5-Percentage for Education Level

From Table 4.2 (c) and its corresponding pie chart, there are five (5) education levels have been selected to narrow down the findings. The pie chart shows only 1% respondents from philosophy doctorate and masters level respectively, 4% respondents from high school level followed by 24% respondents from bachelor level and majority respondents are from diploma education level which contributes 70% as the highest percentage.

(d) Favourite Online Platform

1	Microsoft teams	37%
2	Goggle Meet	59%
3	Zoom	3%
4	Webex	1%
5	Skype	0%
6	Others	0%

Figure 6-Percentage for favourite Online Platform

Under demographic profile, the last question is about the favorite online engagement platform used by the respondents. The majority of the students prefer to engage their study through the Google Meet platform and it is proven with 59% from the whole pie chart followed by the Microsoft Teams platform preferred by 37% of the students. The third platform regularly used by the students is Zoom with 3% of the students and the fourth platform is Webex with only 1% of the students. None of the students prefer to use Skype and other platforms for their online engagement studies.

Findings for Learner-to Learner Engagement

Statement	Mean
L2LNo1Does collaborative learning promote peer-to-peer understanding?	3.8
L2LNo2Are you more likely to ask for help from your peers?	4.1
L2LNo3Do you prefer to be in the same group with your chosen peer for online activities?	4.2
L2LNo4Do you think that the sense of community helps you to engage in online class?	4
L2LNo5Do you think support from peers motivates you to finish tasks?	4.3
L2LNo6Do you think that support from peers prevent you from dropping out of course?	4.2

Figure 7- Mean for Learner-to-learner

The mean score for learner-to-learner involvement is shown in Table 7. There were six statements in total. The correspondents' mean ratings varied from 3.8 to 4.3, as shown in Table 7. On the learner-to-learner subscale, the sixth statement obtained the highest mean score of 4.3. The third and sixth assertions both scored a 4.2 average score. The average score for the second statement was 4.1. The average score for the fourth statement was 4.0. The lowest mean score is 3.8, which pertains to the notion that collaborative learning promotes peer-to-peer comprehension. The importance of peers in online participation is emphasised by the majority of correspondents.

Findings for Learner-to-Instructor Engagement

Statement	Mean
L2Ino1Does your instructor's teaching style involve students' active participation?	4.1
L2Ino2Do you feel encouraged by your instructor to keep engaged in online classroom?	3.9
L2Ino3Does your instructor provide feedback from your previous assessment?	3.9
L2Ino4Do you feel feedback from your instructor on your performances are clear and positive?	4.1
L2Ino5Does your instructor use more than two communication tools to stay connected with students?	4.2
L2Ino6Do you think that online platforms used by your instructor for your online class are effective and convenient?	4
L2Ino7Does your instructor maintain the ongoing interaction with students after online class?	3.9
L2Ino 8Do you think ODL promotes greater participation and intercation among learner and instructor	3.3

Figure 8- Mean for Learner-to-Instructor

Figure 8 shows the aggregated means of learner perception towards learner to instructor engagement. The means value ranging from 3.3 to 4.2 on a 1(lowest) to 5(highest) scale indicated a positive response from students towards engagement with instructors in online learning. Item 5 has recorded the highest mean where the learner agreed to a statement that

the instructor uses more than two communication tools to stay connected with the students. As shown in Figure 8, items 1 and 4 (instructor teaching style and instructor feedback on learner performance, respectively) both had the same mean score of 4.1. Item 6 which measures the effectiveness and suitability of online platforms used by the instructor scored the mean value of 4. In addition, four elements (items 2, 3, 7, and 8) had a mean value of less than 4.0, as can be seen with item 8 measuring student perception that online learning can promote greater participation and interaction among learners and instructors recorded the lowest mean value of 3.3. To summarise, on a scale of 1 to 5, all of the items scored above average, suggesting a positive response from the students on the learner to instructor engagement in online learning.

Findings for Learner-to-Content Engagement

Statement	Mean
L2Cno1Do you think that the synchronous activities (i.e. online discussion) could offer immediate assistance?	3.7
L2Cno2Do you think that the asynchronous activities (i.e. assignment) could offer immediate assistance?	3.6
L2Cno3Do you think the activities could improve the understanding of subject-matter?	4
L2Cno4Do you think the activities in online learning could improve your critical thinking skills?	3.8
L2Cno5Do you think you can use relevant knowledge wisely in the learning process?	3.9
L2Cno6Do you feel that the ease of online content is important?	4.1
L2Cno7Do you feel that it is important to get an overview of the content before the class begins?	4.4
L2Cno8Do you think ODL gives more benefits than drawback?	3.5

Figure 9- Mean for learner-to-Content

Figure 9 indicates learner-to-content interaction in eight virtual learning elements. It shows the mean for eight items of learner-to-content. The item "Do you feel that it is important to get an overview of the content before the class begins?" records the highest mean, which is 4.4. The second-highest mean at 4.1 is recorded by item "Do you feel that the ease of online content is important?" and third-highest mean is 4 is recorded by item "Do you think the activities could improve the understanding of subject-matter?".

Next, for the item "Do you think you can use relevant knowledge wisely in the learning process?" scored 3.9, followed by "Do you think the activities in online learning could improve your critical thinking skills?" scored 3.8 and "Do you think that the synchronous activities (i.e. online discussion) could offer immediate assistance?" scored 3.7.

Meanwhile, the lowest mean of 3.5 is recorded by the question "Do you think ODL gives more benefits than drawback?" and item "Do you think that the asynchronous activities (i.e. assignment) could offer immediate assistance?" records the second-lowest mean which is 3.6.

Conclusion

Summary of Findings and Discussion

Summarise Findings from figure 4-9 and relate to past studies

Current and past studies (Abou-Khalil et al., 2021; Aydin, 2021; Muzammil et al., 2020) have shown that students-students interactions/engagement, student-instructors/tutors/teachers interactions/engagement, and student interactions/engagement with content have significant causal relationships on students' ODL satisfaction and effectiveness. Thus, it is deemed vital to further understand the similarities and differences to the Malaysian students.

The present study analyzes 116 students' perceived responses towards online learning engagement ranging from high school to doctorate level where the majority of the respondents are female and at their diploma level. The predetermined online platform in this study is of synchronous type only and Google meet is the most used.

Peer engagement is highly encouraged in online learning (Mohammed Hamad Amin et al. 2017). The present study found collaborative learning is the least perceived measure to promote peer-to-peer comprehension. However, peer support not only motivates students to complete their tasks, but also to not drop out of their study. The preference to remain in the same online learning group for online activities is high as they seek assistance from the same group of students. These online engagements are encouraged by the sense of community. This is paralleled to past studies where technology used in learning can improve students' participation in class discussions and students (Alhammadi, 2021).

This study found there is a healthy engagement between students and instructors in online learning. This is opposite of the instructor's concerns as reported in Dhawan (2020). This is contributed by the instructor's online teaching style. Instructors also give feedback on learners' performance which is important for the success of online learning. This finding is in line with Rothman et al (2011). The effectiveness of online platforms used by the instructor is also a merit. The instructor initiative to use more than two communication tools to ensure connection to the students is commemorated. Unfortunately, the student perceived that online learning cannot promote greater participation and interaction among learners and instructors. Thus, the promotion of high connection with instructors (Lee et al. 2019) needs to be further looked into.

In the present study reports mediocre success in content-students engagement. Despite reporting that giving an overview of the content before the class begins is the most significant engagement during online learning and that the ease of online content activities could improve the understanding of subject-matter; the students perceived that the use of relevant knowledge wisely in the learning process is average. The current activities in online learning rarely improve students' critical thinking skills and the current synchronous activities (i.e. online discussion) could not offer immediate assistance to them. Students further agreed that ODL gives more drawbacks and the current asynchronous activities (i.e. assignment) could not offer immediate assistance. Abou-Khalil et al (2021); Aydin (2021) have stressed the importance of content-students engagement. Thus, lecturers need to do more to ensure students' satisfaction in the prepared online contents or materials. Online teaching initiatives taken by teachers have proven to assist students' engagement to content (Muir, et al., 2020).

Technology can encourage students to become more knowledgeable about lecture content (Alhammedi, 2021) so teachers need to be technological savvy to promote student-content engagement in online learning.

Pedagogical Implications and Suggestions for Future Research

How should teaching change? How can teaching online be improved?

What should future research look at in terms of online engagement? Why?

The study on online teaching and learning indicates that, although numerous studies have been conducted, appropriate pedagogy and platforms for different class levels ranging from higher secondary to doctorate level need to be investigated further. The issue of affordability and accessibility for all students coming from different economic backgrounds has been regarded as a challenge, for which educational tool developers should focus on customization. Gadgets with internet capabilities and data packages are expensive concerning the average family's income, making accessibility and affordability inadequate (Pokhrel, 2021).

Another problem would be changing the way instructors engage and communicate with students. Lack of student engagement, less critical thinking skills, and the ability to argue and voice their opinions, behaviours that the educational system did not support or develop, are now becoming prominent in the educational system in the process of online learning. Instructors need to adapt their teaching methods and the usage of video conference or webinar is required for better knowledge assimilation throughout courses to balance the number of theory and practical tasks. Furthermore, instructors must vary and use different teaching methods, provide feedback and support on activities completed by students, provide information in multiple formats (audio, text, video), and develop alternative strategies to keep students focused and interested during courses (Coman, 2020).

Online learning effectiveness involves interaction between the learner, the instructor, the learners, and the technology (Fabry, 2009). Future studies should emphasize how to optimize the quality of online learning and how to match technology with course material (Rogerson-Revell, 2015). The challenge for schools and universities is to design courses that meet the needs of students, for instructors to effectively integrate technology into content to facilitate engagement and deeper learning, and for students to be self-disciplined and use technology to engage with other students and the instructor (Kauffman, 2015).

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