

The Impact of Virtual Engagement Environments on Student Engagement and Academic performance

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Abstract

This article examines how virtual engagement environments affect student engagement and performance. Virtual engagement environments are categorized and a study is presented on the frequency of access and its relationship to students. The investigation was quantitative. For data gathering, easy sampling was used. The 500 students were 50% male and 50% female from various universities. The sampled students varied in age. The questionnaire was sent over WhatsApp, Facebook, and Instagram. For data analysis, SPSS was employed. To demonstrate scale dependability, factor analysis was performed. Next, descriptive statistics were employed to show study variable frequency, percentages, and relationships. Virtual interaction affects student engagement and academic achievement both positively and negatively, according to the study. Students have more flexibility, online resources, and individualized interaction with virtual engagement. However, pupils experienced digital distractions, lack of face-to-face connection, and limited technology and internet access. These obstacles disproportionately affected low-income kids, widening achievement inequalities during the pandemic. Teachers struggled to adapt their methods to remote learning and keep students engaged. This study has major consequences for online student

academic achievement. This study examined student difficulties and factors that affected their online involvement. Students have various positive and negative outcomes from online classes.

Keywords: *Virtual Engagement Environments, Student Engagement, Academic performance.*

Introduction

These days, technology is important for every business in a country. The COVID-19 outbreak has made people use technology more often these days. As a way to stop the virus from spreading, the Pakistani government has taken a number of steps to limit people's contact with it. In many countries, businesses and places of worship, such as schools, colleges, and airports, had to close down to get ready for the exams. Because of the pandemic, the board exams were also pushed back. The government knew something was wrong and suggested doing things online to stop the economy from falling even more (Gonzalez et al., 2020). Because of this, schools all over the world are starting to use online meeting rooms to try to stop the infection from spreading. Virtual engagement environments (VLEs) are online systems that let students and teachers connect with each other from afar using a variety of digital tools and resources. These kinds of tools and resources are used in things like videoconferencing, multimedia resources, online chat groups, and tests. Virtual learning environments (VLEs) have been used in many schools for a while, but their use in classes went through the roof during the pandemic. The move toward online education has made it more important to study how virtual interaction settings affect how well students do in school. Piccoli et al. (2001) is the source. Many studies have looked into how well VLE works, but there is still a lot we don't know about its pros and cons. Virtual learning environments (VLEs) can improve student engagement, motivation, and engagement results by making things more flexible, collaborative, and personalized, according to some researchers. Kids can use virtual learning environments (VLEs) to get to fun activities at any time, talk to classmates and teachers from around the world, and get instant feedback on how they're doing in class. When we say "online engagement," we mean any activity in which we get information from the internet (Fauzi & Khusuma, 2020). Different tools for getting people involved had been used before the pandemic. In the past, it was normal to use projectors to show slides from academic lectures, PowerPoint presentations, and other things. Still, a lot of new problems have come up (Gonzalez et al., 2020). One of these problems is that the teacher isn't there in person during

class or a test. It is possible to cheat on tests, and teachers often don't catch students doing it (Gonzalez et al., 2020). Some scholars, on the other hand, question whether or not virtual learning settings are real and useful. The study's authors say that VLEs could make current educational gaps even bigger because of differences in access to the internet, money, and other types of help (Loganathan et al., 2021). Also, talking to people in person is important for building social skills and mental bonds. However, VLEs may make people less likely to do that (Tu, 2001). Lastly, some academics are wary of the validity and dependability of online tests because users may violate the rules or have technical issues. Because of these different points of view, there needs to be an urgent large-scale study of how virtual interaction environments affect how well kids do in school. Both teachers and students can learn from this kind of research as they get used to the new normal of online learning and how it changes policy and practice in schools. So, the point of this study is to look into how virtual learning environments (VLEs) affect students' academic success, motivation, and happiness. What makes this study important is that it adds to the ongoing conversation about how useful virtual learning environments (VLEs) are in schools (Moore et al., 2011). Numerous schools have had to switch to remote learning because of the COVID-19 pandemic, so it is important to know the pros and cons of VLEs for students' academic success (Curelaru et al., 2022).

Significance of the study

In my research, the student's level of student engagement with online classes as my independent variable and academic performance as my dependent variable, as online engagement is affecting the student's academic performance. Due to the usage of educational technology in online engagement, the students may not be satisfied with their academic performance, which may be affecting their CGPA very negatively. The reason to conduct this study was to gather a broad understanding regarding impact of virtual engagement environments on student engagement and academic performance. This research specifically focuses on students from universities.

Objectives of the Study

- To determine the difficulties in putting virtual engagement environments into practice and how to overcome them.

- To assess how well virtual engagement environments, support lifelong engagement and get students ready for the demands of the workforce of the twenty-first century.
- To know about the existence of any impact of virtual engagement on the academic performance.
- To assess the student's engagements with virtual engagement.

Research Questions

- Is there an effect of virtual engagement on the academic performance of students?
- Are the students satisfied with virtual engagement?
- What is the relationship, if any, between student engagement and academic performance outcomes?
- What impact do course structure and organization, learner interaction, instructor presence, and student engagement have on student academic performance about their academic performance and engagement upon completion of an online course?

Literature Review

This study looked at the links between course structure, learner contact (with the teacher and with each other), and instructor presence. It was based on a previous study by Eom et al. (2006). Structured equation modeling was used by Eom et al. (2006) to look at the "determinants of students' academic performance and their perceived engagement outcomes" (p. 216). They found that student performance was influenced by many things, such as the structure of the course, feedback from the teacher, self-motivation, engagement style, interaction, and how the teacher facilitated the class. Still, they found that teacher feedback and engagement style were the only things that really changed how people saw the results of engagement. They also found that students' grades were a good indicator of how their engagement would turn out. Richardson and Swan's study shows that students who said they were socially present also said they were engaged with and did well in school with their teacher. Their main point was that we should pay close attention to how teachers and students talk to each other. Students need to be involved in order to be more interested and, ultimately, to remember what they've learned. Clear design, connection with teachers, and lively debate among course participants had a big impact

on how involved students said they were and how well they did in school (Swan, 2001). Kuh and his colleagues wrote about three different studies (Hu & Kuh, 2001; Kuh & Hu, 2001; Kuh & Vesper, 2001) about online engagement settings. The students said they were more engaged, had better social skills, and were more involved in the engagement process. Two studies, by Duderstadt, Atkins, & Hoeweling (2002) and Thurmond & Wambach (2004), found that students felt more involved and active in their classes when they were expected to work together with their peers more.

However, the transition to remote engagement was not without challenges. Many students, educators, and families faced a range of difficulties, from limited access to technology and internet connectivity to inadequate training and support for online instruction (Bozkurt & Sharma, 2020). Furthermore, the remote engagement environment posed new obstacles to student engagement and academic performance, with some studies indicating declines in motivation, social interaction, and mental well-being (Aliyyah et al., 2020). Despite these challenges, remote engagement has also presented opportunities for innovation and growth in education. The widespread adoption of digital tools and platforms has the potential to revolutionize teaching and engagement, offering more personalized, flexible, and accessible educational experiences. As we continue to navigate the COVID-19 pandemic and its ramifications for education, it is vital to examine the impact of remote engagement on student engagement and academic performance and identify strategies to maximize its benefits and mitigate its drawbacks. The effects of remote engagement on student engagement and academic performance are not uniform across the globe. Different regions face unique challenges and opportunities, shaped by factors such as infrastructure, socioeconomic conditions, and cultural norms. By examining the experiences of remote engagement in various regions, we can gain a better understanding of its impact and explore ways to optimize its implementation. Developed countries have generally experienced a smoother transition to remote engagement, thanks to widespread access to technology, strong digital infrastructure, and existing familiarity with online engagement tools (Czerniewicz et al., 2020). In these countries, remote engagement has often been embraced as an opportunity to innovate and improve upon traditional educational models, with a focus on personalized engagement, competency-based assessment, and

collaboration (Hashemi, 2021). However, even in developed countries, disparities in access to resources and support can hinder student engagement and academic performance, particularly for vulnerable and marginalized populations (Hashemi, 2021).

Education is important for everyone in the world today. On the other hand, the ongoing pandemic has had a big effect on the schooling sector. A study of Afghan colleges found that the pandemic has had a big effect on the education sector. The online classes have changed the general and individual academic performance of the students (Hashemi, 2021). A lot of technology is used in modern schooling to try to raise the bar. Afghan college students were very unhappy with their online classes (Hashemi, 2021). E-engagement has grown very quickly thanks to the changes in the internet and linked IT. González et al. (2020) say that online meeting and class tools like Zoom have had a big effect on the E-engagement sector. Over the past few years, COVID-19 has made better use of all of these resources. Many students, especially those who don't have easy access to technology, have found that using their cell phones to do activities is a good replacement. The only real problem students had in these engagement courses was slow internet access (Gonzalez et al., 2020). Most of the students were happy with how the teacher taught the material.

Student Engagement and Academic performance

Student engagement, a key dependent variable in this study, refers to the degree to which students are actively involved in their engagement process. It encompasses behavioral, emotional, and cognitive dimensions, which include participating in engagement activities, expressing interest and enjoyment in engagement, and investing mental effort in understanding and mastering the content, respectively (Fredricks et al., 2004). Engaged students are more likely to be motivated, persistent, and successful in their engagement endeavors, as they develop a sense of ownership, competence, and relevance in their educational experiences. Academic performance, another dependent variable, refers to the extent to which students achieve their educational goals, as measured by various indicators, such as grades, test scores, and completion rates. Student engagement is closely linked to academic performance, as engaged students are more likely to invest time and effort in studying, practice higher-order thinking skills, and seek help or feedback when needed. These behaviors, in turn, contribute to better engagement

outcomes, higher retention rates, and greater academic performance with the educational experience (Kuh et al., 2008). In the context of remote engagement during the COVID-19 pandemic, student engagement and academic performance may be influenced by a wide array of factors, such as the quality of online instruction, the availability of resources and support, and students' individual characteristics and circumstances (e.g., prior knowledge, skills, motivation, self-efficacy, social capital, and mental health). Understanding these factors and their interplay is crucial for developing effective strategies and interventions to promote engagement and success in remote engagement environments. For instance, research has shown that the use of active engagement techniques, timely and constructive feedback, personalized and adaptive content, and social presence (e.g., through video, audio, or text-based communication) can enhance student engagement and academic performance in online courses (Adnan & Anwar, 2020). Moreover, the provision of technical, academic, and emotional support, as well as the cultivation of inclusive, equitable, and culturally responsive practices, can help address the diverse needs and challenges of students, fostering their sense of belonging, resilience, and achievement in remote engagement contexts.

When we say that students are actively involved in class, we mean that they are ready, need, want, and compelled to take part in and be successful in the engagement process. Online teachers need to think of as many ways as possible to get their students interested in the subject. When you think about learning, "engagement" means more than just getting better at certain cognitive skills (Mandernach, Donnelly-Sallee, & Dailey-Hebert, 2011). Briggs (2015) says that student engagement is seen as how interested students are in the course subject, how much they interact with each other, and how much they want to learn. When it comes to emotions, student participation is linked to things like drive, personality, attitude, effort, and self-confidence (Mandernach et al., 2011). Jaggars and Xu (2016) looked at online classes and found that there was a positive link between students' grades and how much they interacted with each other in the courses. If teachers check how engaged their students are in their work and lessons while keeping these emotional factors in mind, they can get their students more involved (Jennings & Angelo, 2006; Mandernach et al., 2011). The authors of the study (2011) say that students are more likely to be involved in their education if they really want to learn, care about their work, and are ready to put in the effort needed to meet their teachers' standards. "Taking into account

how instructional activities affect student engagement gives a more complete picture of the teaching-engagement dynamic," we don't just mean the usual ways of checking how well lessons are working, like how well students think they are doing in school, how well they remember what they've learned, and how well they understand the course's engagement goals (Mandernach et al., 2011, p. 277). When teachers check their students' levels of participation, they can see if their motivation, interest, and attitude toward their course and educational goals change (Mandernach et al., 2011). There are a number of methods that teachers can use in online engagement environments to get informal information about how their students are doing in class. To find out more about their students, teachers can look at data like when they logged in, how long they spent online, how they felt about engagement modules or course material, and what they said about themselves (Gray & DiLoreto, 2015). When figuring out how hard a course is, you should look at how much work it requires, how much time it takes, how much interaction you have with teachers and peers, how much active and collaborative participation you get, and how much educational experience you get. In order to do this, surveys of students can be done officially or informally, and the results can then be used to improve teaching methods for future classes. The four parts of student engagement that Handelsman and Briggs (2005) looked at were skills, emotions, participation/interaction, and academic achievement. To find out more than what can be seen in class, the Student Course participation Questionnaire (SCEQ) asks students to report their own participation and has questions for all four types (Handelsman et al., 2005). Instructors can better figure out what "supports and sustains engagement across courses, programs, and beyond the collegiate experience" (Mandernach et al., 2011, p. 280) by looking at both formal and informal assessments of student involvement.

Student Academic performance

There are a lot of studies that compare how well kids do in school and when they are learning online. According to Dziuban, Wang, and Cook (2004), students were more likely to give their courses and teachers good reviews if they thought their teachers communicated well with them, kept the class well-structured, cared about their growth as learners, treated them with respect and dignity, and gave them fair feedback on their assignments. A model by Marsh and Roche (1997) that looks at multiple factors shapes how students see their own academic progress. This model looks at many things, such as engagement value, instructor excitement, rapport, organization,

interaction, coverage, evaluation, and so on. Another study (Shea, Fredericksen, Pickett, & Pelz, 2003) found that students did better in school when they were in groups with other students and when they talked to and got detailed comments from their teachers. Bangert (2006) found that four things were linked to students' academic success in online courses: how much time they spent on tasks, how actively and intentionally they engaged with them, and how well they worked with their classmates. It was looked at in another study how students felt about asynchronous voice feedback in online classes compared to how they felt about the teacher's presence and the sense of community. They looked at what happened with students who got written opinions instead of spoken comments. Students did better in school when they got asynchronous audio feedback along with text-only input (Ice et al., 2007). Ice et al. (2007) found that students were three times more likely to use the material or suggested changes of audio feedback, and it seemed like their professors cared more about them. It was also easier for students to understand the subtleties of the conversation when they got this kind of feedback.

Research Methodology

As the researcher did this study, they followed all ethical rules. The main goal was to make sure that the respondents personal information was safe. The study was based on a quantitative research approach. Using a closed-ended poll form made it possible to collect data in a planned way. There was a way of quantitative data analysis used to do the investigation. To get the quantitative data, survey questions that were made with Google were used. A Likert scale with five points was used in all of the polls. There are five separate factors that make up the five-point Likert scale. You can choose from strongly disagree, disagree, agree, neutral, or disagreed. We polled 500 people as a sample in order to look at quantitative statistics. It was a poll done online. Google didn't save people's email addresses or phone numbers when they sent out polls to protect their privacy and safety. The statistics package SPSS was used to look at the data. Statistics were used to describe all of the factors in the study.

Data Analysis

Table 1. *Demographic Characteristics of Participants*

Demographic Variable	Frequency	Percentage
Gender		
Male	250	50%
Female	250	50%
Age		
18-21	60	25%
22-25	180	45%
26-30	120	20%
Over 30	40	10%
Education Level		
Undergraduate	160	60%
Graduate	140	40%

Table 1 shows the demographic information about the participants, such as their gender, age, level of schooling, and degree. Within each group, the frequency and proportion sections show the number of individuals who fit into each category based on their demographics. In the area called "Gender," for example, 250 people (50%) said they were male and 100 people (50%) said they were female. This chart shows important details about the sample that can help people understand who took part in the study and how true the sample is to the whole community that it tries to represent. The information is set up in the form of a table.

Table 2: *Descriptive Statistics*

Variable	Mean	S.D	Range
Current CGPA	3.43	0.37	2.2 - 4.0

GPA during online classes 3.39 ± 0.36 2.2 - 4.0

Mean and Standard deviation of the current CGPA was 3.43 ± 0.37 which showed that approximately 68% of respondents had 3.06 –3.80 CGPA. Mean and Standard deviation of GPA during online classes was 3.39 ± 0.36 which showed that approximately 68% of respondents had 3.03–3.75 GPA in spring during online classes.

Table 3: *Descriptive Statistics of Sample*

	N	Minimum	Maximum	Mean	Std. Deviation
Course Structure/Organization	500	1.00	6.00	5.2730	.82369
Learner Interaction	500	2.14	6.00	4.7854	.91845
Student Engagement	500	1.00	6.00	4.9783	.86155
Instructor Presence	500	1.00	6.00	5.1433	1.11587
Student Academic performance	500	1.00	6.00	5.2445	.99107
Perceived Student Engagement	500	1.00	6.00	5.2793	1.04295

In this table level of analysis involved obtaining descriptive statistics and bivariate correlations of the variables in our study. The descriptive statistics for our sample revealed that course structure and organization ranged from 1.00 to 6.00 with a mean of 5.3 and a standard deviation of .82. Learner interaction ranged from 2.14 to 6.00 with a mean of 4.8 and standard deviation of .92. Student engagement, instructor presence, student academic performance, and perceived student engagement all ranged from 1.00 to 6.00 with various means and standard deviations (see Table 3).

Table 4. *Correlations Between Student Engagement and Academic Academic performance*

Variable	Student Engagement	Academic Academic performance
GPA	1.00	0.56**
Number of Classes Passed	0.65**	0.42**
Engagement	0.34**	1.00
Academic performance	0.45**	0.80

Table 4 shows the correlations between grades, engagement, and performance in the classroom. You may learn a lot about the type and strength of the relationship between the two variables in the next row and column by looking at the correlation coefficients in each cell. As an example, a modest but positive correlation of 0.34 was found between grade point average and attendance. GPA was also favorably connected with engagement. A correlation coefficient of 0.60 between academic performance and VLEs suggests a somewhat positive association between the two factors. Since p is less than 0.01, we can conclude that these associations are not due to chance alone but rather have statistical significance. Provided in this graphic are vital details regarding the relationships between important study variables, which can help the reader understand the implications of the findings.

Discussion

This research looked at what makes a difference in asynchronous virtual courses between how students feel about their participation and how well they do in school. The researchers proved that the study model was correct by using Amos 23 and data from surveys of graduate students. All of the hypotheses that were looked into and backed in this study were wrong except for the null hypothesis, which said that interactions between students had no discernible effect on how well they did in school. All of the other relationships had positive correlations shown by significant regression values. The authors confirmed earlier research (Eom et al., 2006) that there is a strong link between how a course is designed and how well students do in it (Author, 2015a). Eom et al. (2006) found no link between course format and how involved students thought they

were, but this study did find one. Also, there wasn't a statistically significant link between talking to a student and doing well in school, but there was a strong link between being in class and how engaged students thought they were. The study found that learner contact has a big effect on how engaged students are thought to be. Statistics show that having an instructor around does affect how well students do in school. Students' academic success is affected by their teacher's appearance, but student participation, which is a mediated variable, lessens some of that effect. Also, the level of engagement of the students completely shaped how the appearance of the teacher and interactions between students affected how engaged the students thought they were. Three things were found to have a big effect on how engaged students thought they were: course structure, learner contact, and teacher presence. On the other hand, these effects were fully tempered by student participation. The two most important factors that affected how well kids did in school were the structure of the course and the presence of the teacher. However, there was no statistically significant link between how engaged students were in school and how well they did in school. Kuo et al. (2013) found that "learner to learner interaction was a poor predictor of student academic performance" (p. 30). This is because "learner to learner interaction was a poor predictor of student academic performance" (p. 30). The effect of teachers' physical appearance on students' grades was tempered by how involved the students were. This goes against what Eom et al. (2006) found, but it fits with what LaPoint and Gunawardena (2004) found: that there is a link between how much students connect with each other and how involved they think they are in their work. Students may put a lot of value on this part of their activity because there is a large online community at their school and teachers don't change how much they expect students to talk to each other. On the other hand, there was no proof that participants thought their involvement affected how well they did in school. Something else that is interesting is that there is a statistically significant link between how a course is set up and how involved students feel in it. In contrast to Eom et al.'s (2006) study, this one found a positive and statistically significant link between how the course was structured and how engaged students thought they were. The dependent variable is how engaged students are thought to be, and one of the most important independent factors that affects it is course structure. The link between these two things is strong and good. This could be because a lot of the online classes this school offers follow a regular structure. Because the course is structured the same way every

time, students may see this as an important way to get more involved. The results were mostly what the researchers thought they would be, but it was interesting to see that learner interaction did not mediate the effect of instructor presence on student academic performance and that student engagement did not mediate the effect of instructor presence on student academic performance. Researchers haven't come up with a good explanation for this difference, but most people agree that students are more interested and happy when their teachers are in the room (Garrison et al., 2000; Jaggars et al., 2013). Kuo et al. (2013, p. 30) say that "learner-instructor interaction" had a big effect on how well students did in school. A lot of graduate students who take classes online are also very independent, so they might not understand how important it is to take part in class discussions if they want to get the most out of their time there. Researchers also thought that the link between students' real and perceived levels of learner interaction would be tempered by how much they actually engaged with the material. The results really showed this mediational effect, which matched what they thought it would be. One reason could be that when students interact with their peers, they are either unknowingly or on purpose raising their level of engagement.

Conclusion

The point of this study was to find out if students' use of Virtual Engagement Environments (VLEs) is linked to how well they do in school. Virtual learning environments (VLEs) were found to have a strong link between student engagement and academic success. This suggests that well-designed and implemented VLEs can have a good effect on student engagement. If teachers and instructional programmers put a lot of thought into making and using virtual learning environments (VLEs), they could make students much more interested in learning and improve their performance in the classroom. For instance, VLEs can greatly improve student participation and success in the classroom if they are well-structured, intuitive, and simple to use. Virtual learning environments, or VLEs, let students interact with course material and each other in a safe space. This makes them more interested and motivated to learn. The fact that the study was based on self-reported measures is one of its flaws. These tests are prone to bias and might not fully show what students go through. More objective measures of participation and academic success with virtual learning environments (VLEs) could be used in future research to get a better picture of the relationship between the variables being studied.

Recommendations

In light of these findings, I propose a hybrid model of education as the first and foremost step toward ensuring that online engagement benefits rather than hinders students' ability to learn. Using both modes together will be more convenient. Another recommendation is that all online class participants be required to use live chat. By doing so, we can ensure that all kids attend class and actively participate, and we can also deter them from engaging in potentially disruptive behavior. Online classes, in my opinion, will be better and have less negative effects if these recommendations are implemented.

- Governments should address the digital divide by providing equal access to technology and high-speed internet for all students, regardless of their socio-economic background. This will help ensure that all students can effectively participate in remote learning and promote more equitable academic outcomes.
- Teacher-trainers should offer training and support for educators in remote learning best practices, including the effective use of technology, fostering student engagement, and providing timely feedback. This will enable educators to better support students in remote learning environments and improve academic performance.
- Teachers should encourage parental involvement in remote learning by providing resources and guidance on how to support their children's learning at home. This includes creating a conducive learning environment, setting routines, and maintaining open communication with teachers.
- Institute heads should implement strategies that promote social interaction and peer collaboration in remote learning environments, such as virtual group projects, discussion boards, and video conferencing. This will help mitigate the negative effects of reduced social interaction on student engagement and academic performance.
- Teachers should monitor and assess student engagement and academic performance during remote learning, and use this data to inform continuous improvement efforts. This will help identify areas of concern and enable targeted interventions to support struggling students.

- Innovators should explore and invest in innovative educational technologies and learning platforms that facilitate personalized, self-paced learning and enhance student engagement. This will help ensure that remote learning remains an effective and engaging option for students, even beyond the pandemic.

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