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Exploring the Influence of Environment on Online Learning

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Abstract

The success of online learning is affected by several aspects of the environment, namely behaviour, personal factors, and environment. This paper aims to present the influence of the environment on online learning. The quantitative study administered a questionnaire consisting of 21 items to 171 respondents who were students of higher education. For the first research question regarding the influence of environment, it was found that the students highly regarded the instructor's ability to involve them in active participation, indicating that instructors effectively engaged students in interactive learning processes. Meanwhile, for the second research question regarding behaviour, the findings showed that peer support is seen as a crucial motivator for completing tasks. For the third research question regarding personal factors in online learning, findings showed that the students highly valued the ease of accessing online content and the importance of having a preliminary overview before class starts. Finally, the fourth research question revealed three significant relationships: environment and behaviour, behaviour and person, and person and environment. Discussions of the findings and future research recommendations are also presented in the paper.

Keywords: Online Learning, Environment, Behaviour, Person, Online Learning Engagement.

Introduction

Background of Study

The shift to online learning has brought significant attention to the learning environment and its impact on student engagement and satisfaction. The environment in online learning settings significantly influences the interaction between learners and instructors. According to Heilporn et al (2021), a well-structured course that integrates synchronous and

asynchronous activities is crucial for maintaining student engagement in learning. The role of instructors in this environment is to foster trust and provide ongoing feedback, which are vital for student engagement and satisfaction. Nyathi and Sibanda (2021), further emphasise that interactions between students and instructors provide essential guidance and personalised support, helping to create a supportive learning environment. This shows that the study of this topic is important due to its implementation of effective online learning environments, eventually leading to improved student engagement, retention, and overall success.

As online learning becomes more prevalent, students who are passive and suffer to focus on a physical classroom may gain more benefits and have better opportunities to participate in class discussions through online learning. With the increasing reliance on online learning platforms, these interactions also help build rapport and a sense of presence, which are key components in an effective online learning environment (Heilporn et al., 2021; Nyathi & Sibanda, 2021). Additionally, understanding the environmental factors that contribute to effective online learning can help instructors and curriculum developers cater to various learners' needs, including those with disabilities or from diverse cultural backgrounds.

However, it is crucial to recognise the significant impact of the environment, behaviour and content on online learning outcomes. Hendrix (2024), mentioned that it is essential to investigate how environmental factors, such as behavioural engagement, personal factors and environment, can affect learners through the online learning process. For instance, a cluttered or noisy environment can hinder students' ability to focus and process information effectively, leading to decreased learning outcomes. Learner-to-learner interactions such as group projects and discussion boards strongly influence behavioural engagement in online learning by facilitating the exchange of ideas and collaborative problem-solving (Nyathi & Sibanda, 2021). On the other hand, students' interactive personal engagement with the varied content and course material is essential for maintaining student interest and motivation and significantly impacts their engagement and learning outcomes (Abdul Wahid et al., 2021). By examining the relationship between all these elements and online learning, this study aims to provide valuable insights that can inform the development of evidence-based online learning strategies.

Statement of Problem

Comprehending the impact of the learning environment on virtual education is complicated. As e-learning advances, the existing issues become more apparent (Xiulin et al., 2021). Even though online lessons promote easy access for learners, educators and institutions should not neglect students' real experience in virtual classes. Failure to identify the difficulties that learners encounter can lead to issues of attendance and involvement among students, in addition to the challenge of adapting to online classrooms (Nambiar, 2020). Besides that, each student has a different pace for gauging the lessons and ignorance of the environmental impact of the virtual class makes students lose flexibility in learning when it is supposed to eliminate the time constraint that traditional learning has (Kadiresan et al., 2021).

Failing to address the contributing factors adequately could make instructors struggle to provide conducive settings for students to learn virtually. The absence of knowledge about learners' preferences and experiences in the online learning environment only causes

instructors to produce low-quality instructions. The low value of education leads to stress among students, and considering learners' perceptions is crucial to helping increase the quality and performance of students (Tan et al., 2021). Furthermore, without insights into the impact of the environment on virtual learning, it becomes challenging for higher institutions to accommodate students' ability to learn effectively in online classes. Insufficient virtual education facilities, such as restricted internet connectivity, contribute to learners' difficulties and make them experience problematic processes in learning (Lee, 2020; Selvanathan, 2023). All the mentioned factors, if not addressed accordingly, will impede students' online learning experience. Therefore, it will take a toll on learners' motivation and performance to participate in online learning.

This study highlights the impact of the learning environment, in terms of instructors' roles in online learning. Yet few studies have identified the importance of learners' involvement as a part of the encouraging factors in virtual lessons (Gedera et al., 2015; Kadiresan et al., 2021). For instance, Kadiresan et al (2021), investigated the factors that motivate online learners among private university students during the COVID-19 pandemic. The study revealed that learners' involvement and instructors' roles affect the students' motivation and achievement in online learning. On the other hand, the learning environment and technical amenities had a less significant impact on students' online learning at the private university. This study identified the need for thorough research to explore further the various types of instructor roles and learners' different strategies to improve and have a better grasp of the effectiveness of online learning.

Moreover, the study conducted by Zamani et al (2022), indicated that based on the learners' perspective, instructors progressively created effective learning settings, prioritising the learners, knowledge, content, tasks, and community and considering the methods that guide students to process the information transmitted. However, a definite topic and an evaluation of their thoughts on the online learning environment are missing. Kedia and Mishra (2023), stated the variables influencing students' achievement in virtual classrooms by using exploratory factor analysis. The study successfully proved that the more interaction the students have with the instructors, the greater their involvement in the online lessons. Social media, family support, and technical support also indicated a positive connection with the students' performance. Despite that, peers did not seem to affect learners' participation in learning in the online classroom. The study also highlighted the need to examine other variables affecting online education performance. Therefore, this emphasizes the necessity of carrying out the current study to ensure further investigation can be made to view the engagements learners have with peers, instructors, and content.

Objective of the Study and Research Questions

This study explores the influence of the environment on online learning. Specifically, this study is done to answer the following questions:

1.3.1 How does the environment influence online learning?
1.3.2 How does behaviour influence online learning?
1.3.3 How do personal factors influence online learning?
1.3.4 Is there a relationship between all factors in online learning?

Literature Review

Drawbacks and Advantages of Online Learning

The COVID-19 pandemic has pushed the use of online learning to the forefront, revealing both its strengths and weaknesses. One of the primary benefits of online learning is its flexibility and accessibility. Students can schedule their studies at their convenience, enabling them to learn at their own pace and from any location. This has been particularly useful during the pandemic when traditional classrooms were not an option (Huynh & Nguyen, 2024; Yuhanna et al., 2020). Additionally, online learning removes geographical barriers, granting students access to a wide range of educational resources and expertise from around the world, which improves the overall learning experience (Naseer & Perveen, 2023).

Another significant benefit of online learning is its cost-effectiveness. The reduction in costs associated with transportation, meals, and physical infrastructure makes education more affordable and accessible to a larger population (Naseer & Perveen, 2023; Huretska, 2023). Moreover, online learning allows better collaboration and communication among students and instructors through digital platforms, creating an environment conducive to interactive and engaging learning experiences (Huynh & Nguyen, 2024). These platforms encourage exchanging ideas and teamwork, which are crucial for comprehensive learning (Naseer & Perveen, 2023).

Online learning also provides immediate feedback and supports self-paced learning. Digital learning environments often offer instant feedback on assignments, enabling students to promptly adjust their learning strategies (Naseer & Perveen, 2023). This mode of learning allows students to manage their time effectively, catering to different learning styles and needs (Huynh & Nguyen, 2024). Furthermore, the integration of various multimedia tools enriches the learning experience by making content delivery more engaging and effective (Yuhanna et al., 2020; Huretska, 2023). Online learning also provides opportunities for career advancement, allowing students to balance work and study, thereby enhancing their professional skills and knowledge (Naseer & Perveen, 2023).

Despite these benefits, online learning also presents several challenges. Technical difficulties and issues related to accessibility are significant concerns. Insufficient internet connectivity and a lack of necessary technological devices can hinder the effectiveness of online learning, particularly in regions with limited technological infrastructure (Naseer & Perveen, 2023; Huretska, 2023). Technical malfunctions and disruptions can also negatively impact the learning experience, making it difficult for both students and instructors to maintain a smooth and effective educational process (Yuhanna et al., 2020).

Another major drawback is the limited face-to-face interaction, which can lead to feelings of isolation and a diminished sense of community among students (Naseer & Perveen, 2023; Huynh & Nguyen, 2024). The absence of physical presence and direct interaction can negatively affect student motivation and engagement, which are crucial for successful learning (Huretska, 2023). Additionally, online learning demands high levels of self-discipline and time management skills from students. Without these skills, students may struggle with procrastination and fall behind in their coursework (Naseer & Perveen, 2023; Huynh & Nguyen, 2024).

The quality of instruction in online learning environments can also be a concern. Instructors may find it challenging to adapt their teaching methods to online platforms, potentially leading to a decrease in the quality of education (Huretska, 2023; Yuhanna et al., 2020). Furthermore, prolonged screen time associated with online learning can cause physical and psychological health issues, such as eye strain and increased stress levels (Naseer & Perveen, 2023). Ensuring academic integrity is another challenge, as it is easier for students to cheat in online assessments than in traditional, supervised exams (Naseer & Perveen, 2023).

Past Studies on Online Learning

Substantial research has been done to investigate the advantages and drawbacks related to online learning environments. Yuhanna et al. (2020) conducted a comprehensive study to explore the advantages and disadvantages of online learning. Their analysis, which involved reviewing existing literature, identified several key benefits of online learning, including flexibility, reduced costs, diverse media formats, easy access to information, enhanced communication and collaboration, and immediate feedback. However, they also highlighted significant drawbacks, such as technical issues, lack of face-to-face interaction, the necessity for self-discipline, the potential for cheating, health problems due to prolonged screen time, and challenges in maintaining quality control. The implications of their findings suggest that while online learning presents substantial benefits, it also requires robust strategies to address the identified challenges, particularly in improving technological infrastructure and maintaining student engagement and academic integrity.

Naseer and Perveen (2023), focused their study on the advantages and disadvantages of online learning courses during and after the COVID-19 pandemic. A systematic review of 26 recent studies identified key benefits such as flexibility, cost reduction, increased collaboration, improved time management, and immediate feedback. However, their findings also pointed out several disadvantages, including higher withdrawal rates, increased time demands on instructors, easier procrastination, feelings of isolation, challenges in preventing cheating, and health problems. Their study highlights the importance of developing comprehensive support systems and enhancing technological infrastructure to mitigate these challenges and maximise the benefits of online learning.

Huretska (2023), provided a detailed review of the peculiarities of online education in Ukraine, particularly during the COVID-19 pandemic and the ongoing Russian military aggression. Through the systematic review of 40 publications from 2019-2023, the study highlighted the flexibility, cost reduction, access to diverse resources, and enhanced technological integration offered by online education. However, it also identified significant challenges, such as technical difficulties, lack of face-to-face interaction, the need for self-discipline, and potential declines in educational quality. The implications of Huretska's findings emphasise the critical need for improved technological infrastructure and support, along with strategies to preserve the value of personal communication in online education.

Lastly, Huynh and Nguyen (2024), investigated the perceptions of Vietnamese English-majored students towards online learning during the COVID-19 pandemic. Utilising surveys based on the Technology Acceptance Model (TAM), they collected data from 60 Vietnamese

EFL learners at a university in southern Vietnam. Their findings indicated that students generally perceived online learning positively, appreciating its flexibility, ease of use, interaction with instructors, effective time management, and use of multimedia tools. However, challenges such as technical issues, lack of face-to-face interaction, difficulty in maintaining concentration, and the need for self-discipline were also noted. The study suggests that while students see many advantages in online learning, traditional face-to-face learning is still preferred by some due to equipment issues and concentration challenges. To enhance the online learning experience, the study recommends improving internet access, providing financial support, and offering training for instructors.

Conceptual Framework

Figure 1 shows the conceptual framework of the study. This study explores the influence of the environment on online learning. Successful online learning needs to have factors like attention, satisfaction, relevance and confidence (Rahmat et al., 2021). Similarly, Bandura (1986) states in his social cognitive theory that learners need to interact with people, materials, and the environment. The framework of this study is scaffolded from Bandura's (1986) three factors to merge with Martin and Bolliger's (2018) types of interaction, as presented in Figure 1 below.

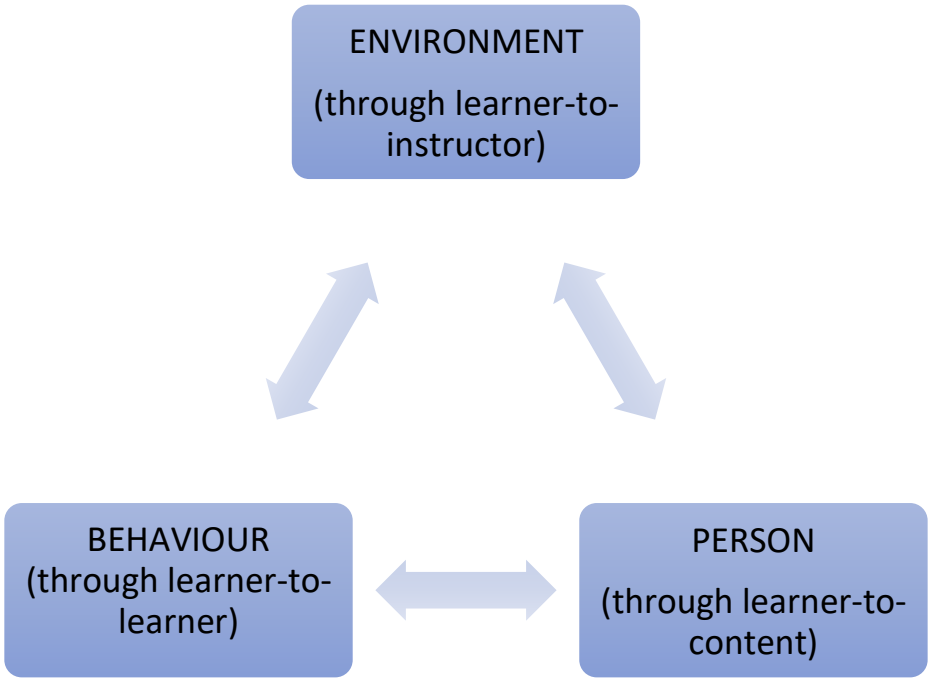

Figure 1 Conceptual Framework of the Study: The Influence of Environment on Online Learning

Methodology

This quantitative study was done to explore factors that influence online learning. A purposive sample of 171 participants responded to the survey. The instrument used was a 5 Likert-scale survey and was rooted in Bandura (1986), and Martin and Bolliger (2018), to reveal the variables in Table 1 below. The survey contained four sections. Section A was to

obtain their demographic profile data. Meanwhile, Section B identified learner-to-learner interaction, Section C examined learner-to-instructor interaction, and Section D was to find learner-to-content interaction.

Table 1
Distribution of Items in the Survey

SECTION	SOCIAL COGNITIVE THEORY (Bandura,1986)	TYPE OF INTERACTION	No of Items	Cronbach Alpha
B	BEHAVIOUR	Learner-to-learner	6	.779
C	ENVIRONMENT	Learner-to-Instructor	7	.873
D	PERSON	Learner-to-Content	8	.895
		Total No. of Item	21	.927

The analysis shows a Cronbach alpha of learner-to-learner for person, a Cronbach alpha of learner-to-instructor for environment and a Cronbach alpha for learner-to-content for behaviour, thus revealing a good reliability of the instrument chosen/used. Further analysis using SPSS was done to present findings to answer the research questions for this study. The data were then analysed using descriptive statistics. According to Rawat (2021), descriptive analysis helps describe and show data points constructively so that patterns might emerge that fulfil every condition of the data.

Findings

This chapter discusses the study's findings and interpretation of the results. The questionnaire used in this study was thoroughly analysed to ensure that the data gathered was presented using visual aids to accomplish the research objectives. The findings for the demographic profile of the respondents include seven items: Gender, Semester, Study Level, Faculty, Learning Location, Internet Access, and Types of Institutions.

Findings for Demographic Profile

Table 2
Percentage for Gender

1	Male	42%
2	Female	58%

The gender distribution of the subjects is depicted in Table 2. According to the findings, from a total of 171 participants, 58% of the subjects under study were female students, and 42% were male students.

Table 3
Percentage for Semester

1	Part 1-2	12%
2	Part 3-4	67%
3	Part 5-6	18%
4	Part 7-8	3%

Table 3 shows the semester distribution of the research participants in this study. The majority of the participants were from semesters 3 and 4 with 67%, followed by students from semesters 5 and 6 with 18% and semesters 1 and 2 with 12%. The least participation recorded was from semesters 7 and 8 with only 3%.

Table 4
Percentage for Level

1	Diploma	84%
2	Degree	16%

As Table 4 shows, 84% of the 171 participants were diploma-level students, which is the majority. The remaining 16% were degree-level students.

Table 5
Percentage for Faculty

1	Science & technology	30%
2	Social Sciences	63%
3	Business Studies	7%

Table 5 shows the percentage of faculty involved in this study. Three faculties were involved in completing this study, which consisted of participants from the Faculty of Social Sciences, the Faculty of Science and Technology, and the Faculty of Business Study. The highest number of involvements was from the Faculty of Social Sciences, with 63%, followed by the Faculty of Science and Technology, with 30%. The lowest number of participants represented was from the Faculty of Business Studies, with only 7%.

Table 6
Percentage for Learning Location

1	Home	90%
2	College	10%

Table 6 depicts the percentage of the learning location. In this study on online engagement in learning, 90% of the participants out of 171 respondents were learning remotely from their homes, while the smallest percentage (10%) of the findings were learning from their college.

Table 7
Percentage for Internet Access

1	Slow	4%
2	Medium	64%
3	Strong	32%

Table 7 refers to the speed of participants' Internet access. Respondents were given three options regarding their Internet access speed: Slow, Medium, and Strong. Based on the findings, from 171 participants, 64% reported that their Internet access speed was in a

medium category, 32% reported having strong Internet access, and only 3% stated to have slow Internet access.

Table 8

Percentage for Institution

1	Public	96%
2	Private	4%

Table 8 represents the percentage of the institutions involved in this study, which can be categorised into public and private institutions. The highest percentage (96%) of the respondents were from public institutions, while only a small percentage (4%) out of 171 participants were from private institutions.

Findings for Environment

The data discussed in this section pertains to research question 1, which concerns how the environment impacts online learning. In the context of this research, the environment is evaluated via learner-to-instructor interaction.

Table 9

Mean for Environment

Statement	Mean
L2IQ1 Does your instructor's teaching style involve students' active participation?	4.0
L2IQ2 Do you feel encouraged by your instructor to keep engaged in the online classroom?	3.9
L2IQ3 Does your instructor provide feedback from your previous assessment?	3.9
L2IQ4 Do you feel feedback from your instructor on your performances is clear and positive?	3.9
L2IQ5 Does your instructor use more than two communication tools to stay connected with students?	3.9
L2IQ6 Do you think that online platforms used by your instructor for your online class are effective and convenient?	3.9
L2IQ7 Does your instructor maintain ongoing interaction with students after online classes?	3.9

Table 9 illustrates the mean scores related to the learning environment's effects on virtual education. Overall, the results indicate consistent positive feedback from the respondents on the components of online learning connected to the environment that they experienced. With a score of 4, the mean of instructors' teaching style, it is suggested that the respondents agreed that student involvement was considered in the instructional approach. Furthermore, the average rating for instructors' motivation to keep students involved and other environment-related aspects is 3.9. This includes the delivery of timely responses, including various communication tools, effective and convenient online platforms, and continuous after-class teacher-learner interaction. These findings suggest that methods and technological infrastructure in the educational environment play a significant role in moulding and facilitating learners' productive learning in the virtual classroom.

Findings for Behaviour

This section presents data to answer research question 2- How does behaviour influence online learning? In the context of this study, behaviour is measured by learner-to-learner interaction.

Table 10

Mean for Behaviour

Statement	Mean
L2LQ1 Does collaborative learning promote peer-to-peer understanding?	3.7
L2LQ2 Are you more likely to ask for help from your peers?	3.8
L2LQ3 Do you prefer to be in the same group with your chosen peer for online activities?	4.0
L2LQ4 Do you think the sense of community helps you engage in online classes?	3.9
L2LQ5 Do you think support from peers motivates you to finish tasks?	4.1
L2LQ6 Do you think that support from peers prevents you from dropping out of course?	3.8

Table 10 presents mean scores for statements that evaluate the impact of peer interactions on learning experiences in online settings. The data suggests that collaborative learning effectively promotes peer-to-peer understanding, with a mean score of 3.7. Additionally, students appear more inclined to seek help from their peers, scoring 3.8 on this measure. A particularly strong preference is shown for working in groups with chosen peers, which received the highest mean score of 4.0, indicating a significant favour towards structured peer groups in online learning environments. The sense of community is also highly valued, with a mean score of 3.9, suggesting that a strong community feeling aids in engaging students more deeply in their online classes. Furthermore, peer support is seen as a crucial motivator for completing tasks, reflected in the highest score of 4.1. Similarly, the role of peer support in preventing dropout from online courses is recognized, scoring 3.8.

Findings for Person

This section presents data to answer research question 3- How do personal factors influence online learning? In the context of this study, personal factors are measured by learner-to-content interaction.

Table 11
Mean for Person

Statement	Mean
L2CQ1 Do you think that the synchronous activities (i.e. online discussion) could offer immediate assistance?	3.7
L2CQ2 Do you think that the asynchronous activities (i.e. assignment) could offer immediate assistance?	3.7
L2CQ3 Do you think the activities could improve the understanding of subject matter?	4.0
L2CQ4 Do you think the activities in online learning could improve your critical thinking skills?	3.8
L2CQ5 Do you think you can use relevant knowledge wisely in the learning process?	4.0
L2CQ6 Do you feel that the ease of online content is important?	4.0
L2CQ7 Do you feel that it is important to get an overview of the content before the class begins?	4.1
L2TQ8 Do you think that ODL give more benefits than drawback?	3.4

Table 11 shows the mean values for personal factors' influences in online learning. Learners agreed with the highest mean of 4.1 that it is essential to get the overview of the content before the class begins. Followed with the mean of 4 where the learners believed that activities, relevant knowledge and online content are important in ensuring the online learning process went smoothly. The lowest mean score is to the item of L2TQ8 where learners found that ODL does not really give much benefits to them.

Findings for Relationship between All Components in Online Interaction

This section presents data to answer research question 4- Is there a relationship between all factors in online learning? To determine if there is a significant association in the mean scores between all factors in online learning, data is analysed using SPSS for correlations. Results are presented separately in Tables 12, 13 and 14 below.

Table 12
Correlation between Environment and Behaviour

Correlations			
		Environment	Behaviour
Environment	Pearson Correlation	1	.578**
	Sig. (2-tailed)		.000
	N	171	171
Behaviour	Pearson Correlation	.578**	1
	Sig. (2-tailed)	.000	
	N	171	171
**. Correlation is significant at the 0.01 level (2-tailed).			

Table 12 shows there is an association between environment and behaviour. Correlation analysis shows that there is a high significant association between environment and behaviour. (r=.578**) and (p=.000). According to Jackson (2015), coefficient is significant at the .05 level and a positive correlation is measured on a 0.1 to 1.0 scale. A weak positive correlation would be in the range of 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between environment and behaviour.

Table 13
Correlation between Behaviour and Person

Correlations			
		Behaviour	Person
Behaviour	Pearson Correlation	1	.634**
	Sig. (2-tailed)		.000
	N	171	171
Person	Pearson Correlation	.634**	1
	Sig. (2-tailed)	.000	
	N	171	171
**. Correlation is significant at the 0.01 level (2-tailed).			

Table 13 shows there is an association between behaviour and person. Correlation analysis shows that there is a highly significant association between behaviour and person (r=.634**) and (p=.000). According to Jackson (2015), the coefficient is significant at the .05 level, and a positive correlation is measured on a 0.1 to 1.0 scale. A weak positive correlation would be in the range of 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between behaviour and person.

Table 14
Correlation between Person and Environment

Correlations			
		Person	Environment
Person	Pearson Correlation	1	.651**
	Sig. (2-tailed)		.000
	N	171	171
Environment	Pearson Correlation	.651**	1
	Sig. (2-tailed)	.000	
	N	171	171
**. Correlation is significant at the 0.01 level (2-tailed).			

Table 14 shows there is an association between person and environment. Correlation analysis shows that there is a highly significant association between person and environment (r=.651**) and (p=.000). According to Jackson (2015), the coefficient is significant at the .05 level, and a positive correlation is measured on a 0.1 to 1.0 scale. A weak positive correlation would be in the range of 0.1 to 0.3, a moderate positive correlation from 0.3 to 0.5, and a strong positive correlation from 0.5 to 1.0. This means that there is also a strong positive relationship between a person and the environment.

Conclusion

Summary of Findings and Discussions

This study explores the factors which influence the environment of online learning. The first research focuses on the influence of the environment on online learning. The findings show that students highly regard the instructor's ability to involve them in active participation, indicating that instructors effectively engage students in interactive learning processes. This finding is consistent with Heilporn et al (2021), study, which highlights the importance of a structured course that integrates synchronous and asynchronous activities to maintain student engagement. Other aspects of the online educational environment also received high ratings, such as the encouragement from instructors to stay engaged, the clarity and positivity of feedback on performance, the use of multiple communication tools by instructors to stay connected with students, the effectiveness and convenience of the online platforms used, and the maintenance of ongoing interaction after class. These results align with Richards and Thompson's (2021), findings, which highlight the significance of clear communication and the use of interactive elements in developing an engaging online learning environment. This constancy in mean scores across various aspects of instructional interaction suggests that instructors consistently provide supportive, engaging, and responsive teaching practices, which are essential for developing a productive online learning environment.

The second research question highlights the influence of behaviour in online learning. The findings suggest that collaborative learning effectively promotes peer-to-peer understanding. This aligns with Nyathi and Sibanda's (2021) emphasis on the importance of learner-to-learner interactions in creating a supportive and engaging online community.

Additionally, students are inclined to seek help from their peers, showing a significant preference for working in groups with chosen peers. This preference indicates a strong favour towards structured peer groups in online learning environments, supporting findings from Abdul Wahid et al (2021), which highlight the role of peer support in enhancing student engagement and preventing dropout. The sense of community is also highly valued, suggesting that a strong community feeling aids in engaging students more deeply in their online classes. Furthermore, peer support is seen as a crucial motivator for completing tasks and preventing dropout from online courses, reinforcing the importance of social connections in online learning.

The third research question addresses the influence of personal factors on online learning. The findings show that both synchronous activities like online discussions and asynchronous activities such as assignments are perceived as equally effective in providing immediate assistance. Students report a high level of satisfaction with the potential of these activities to enhance their understanding of the subject matter and their ability to use relevant knowledge effectively. These findings are aligned with Abdul Wahid et al.'s (2021) observations on the significance of varied and interactive content in maintaining student interest and motivation. Additionally, these activities are seen as beneficial for improving critical thinking skills. The ease of accessing online content and the importance of having a preliminary overview of the content before class starts are also highly valued. However, when evaluating the overall benefits of online distance learning (ODL) compared to its drawbacks, there are some mixed feelings about the overall efficacy of ODL. These insights suggest that while certain aspects of online learning are highly appreciated for their immediate support and educational enhancement, there remains a degree of scepticism regarding the comprehensive benefits of online education formats.

Lastly, the fourth research question highlights the relationship between all factors in online learning. Correlation analysis reveals significant associations between the environment, behaviour, and person in online learning settings. There is a strong positive correlation between the environment and behaviour, indicating that changes in the learning environment significantly impact student behaviour. Similar findings are supported by Abdul Wahid et al (2021), who emphasise the role of a conducive learning environment in shaping student engagement and behaviour.

Additionally, there is also a strong positive correlation between behaviour and person, suggesting that individual characteristics and behaviours are closely linked in the context of online learning. This finding highlights the importance of understanding personal factors in influencing student behaviour, reinforcing the results of Nyathi and Sibanda (2021), who found that personal engagement significantly affects learner satisfaction.

Furthermore, the correlation analysis highlights a strong positive correlation between a person and the environment. This result suggests that the learning environment significantly influences individual characteristics, further underscoring the interplay between these factors in online learning settings. The findings support the conclusions of Heilporn et al. (2021), who noted the critical role of a well-structured and interactive learning environment in enhancing personal engagement and overall learning outcomes.

Pedagogical Implications and Suggestions for Future Research

Generally, the study provides useful insights for educators and institutions in comprehending the factors influencing the online learning environment. This enables the improvement and creation of effective online learning spaces that cater to learners' needs. Furthermore, this study could serve as a reference for improving the policies prepared by the educational ministry. This includes providing sufficient and strong resources and support, both physically and mentally, without compromising the learners' well-being. This study extends beyond these contributions, as comprehending the findings will also lead to additional pedagogical implications.

The findings highlight several pedagogical implications that can guide educators, institutions, and policymakers in enhancing the effectiveness of online education. Regarding active participation and engagement, instructors play a crucial role in engaging students actively in online learning environments. The high ratings for instructor involvement suggest that incorporating structured, interactive elements, both synchronous and asynchronous, is vital for maintaining student engagement (Yuhanna et al., 2020; Huynh & Nguyen, 2024). This is consistent with the findings of Heilporn et al (2021), who emphasised the importance of such integration to keep students involved.

Meanwhile, clear and positive feedback, along with the use of multiple communication tools, enhances the learning experience. Instructors should continue to employ diverse communication methods to connect with students and provide ongoing, constructive feedback (Naseer & Perveen, 2023). These practices are essential for creating a supportive and responsive online learning environment, as highlighted by (Richards and Thompson, 2021).

As collaborative learning and structured peer interactions are highly valued by students, institutions should facilitate peer-to-peer learning opportunities, such as group projects and discussion forums, to foster a sense of community and enhance engagement (Naseer & Perveen, 2023; Huynh & Nguyen, 2024). This aligns with the findings of Nyathi and Sibanda (2021), and Abdul Wahid et al (2021), which stress the importance of learner-learner interactions and peer support in preventing dropout.

Moreover, both synchronous and asynchronous activities effectively provide immediate support and enhance understanding. Educators should use a mix of real-time discussions and self-paced assignments to cater to different learning preferences and improve critical thinking skills (Huynh & Nguyen, 2024). This approach resonates with Abdul Wahid et al.'s (2021) observations on maintaining student interest through varied content.

Future research should focus on the best practices for training instructors to effectively deliver online education. Understanding the specific skills and strategies that enhance online teaching can improve the overall quality of instruction (Naseer & Perveen, 2023).

References

Abdul Wahid, H. S., Rahmat, N. H., Dzuradeen, N. S., & Abdul Kadir, N. (2021). Are Students Engaging in Online Classrooms? *Journal of Online Learning and Teaching, 17*(2), 112-130. DOI: 10.46827/ejes.v7i12.3408

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice-Hall.

Gedera, D., Williams, J., & Wright, N. (2015). Identifying factors influencing students' motivation and engagement in online courses. *Motivation, Leadership And Curriculum Design*, 13-23. https://doi.org/10.1007/978 981 287 230 2_2

Heilporn, G., Lakhal, S., & Bélisle, M. (2021). An Examination of Teachers' Strategies to Foster Student Engagement in Blended Learning in Higher Education. *Journal of Educational Technology Systems, 50*(1), 57-75. https://doi.org/10.1186/s41239-021-00260-3

Hendrix, E. (2019, December 19). How your surroundings affect the way you study. *UCAS; UCAS.* https://www.ucas.com/connect/blogs/how-your-surroundings-affect-way-you-study

Huretska, N. (2023). Modern challenges and prospects for the development of remote education: A systematic review of the literature. *Scientific Bulletin of Mukachevo State University. Series "Pedagogy and Psychology", 9*(4), 107-115. DOI: 10.52534/ msu-pp4.2023.107.

Huynh, N. T., & Nguyen, T. N. T. (2024). Exploring Vietnamese EFL Learners' Perceptions Towards Online Learning at University Education. *Anatolian Journal of Education, 9*(1), 57-68. DOI: https://doi.org/10.29333/aje.2024.914a

Jackson, S. L. (2015). *Research Methods and Statistics-A Critical Thinking Approach (5th Edition)*. Boston, USA: Cengage Learning.

Kadiresan, V., Sujin, J., & Rahim, H. A., & Rasu, F. (2021). Motivating factors influencing online learning among university students: A study of a private university in Malaysia. *Journal of Social Science Studies, Macrothink Institute, 8(*2), 1-88, DOI:10.5296/jsss.v8i2.18926

Kedia, P., & Mishra, L. (2023). Exploring the factors influencing the effectiveness of online learning: A study on college students. *Social Sciences & Humanities Open, 8(*1), 100559–100559. https://doi.org/10.1016/j.ssaho.2023.100559

Lee, S. (2020, 16 June). Sabah Student Stays Overnight in Tree to Get Better Internet Connection for Online University Exams. https://www.thestar.com.my/news/nation/2020/06/16/sabah-uni-student-stays-overnight-in-tree-to-get-better-internet-connection-for-online-exams

Martin, F. & Bolliger, D.U. (2018). Engagement matters: Student perceptions on the importance of engagement strategies in the online learning environment. *Online Learning 22*(1), 205- 222. doi:10.24059/olj.v22i1.1092

Nambiar, D. (2020). The impact of online learning during COVID-19: students' and teachers' perspective. *The international journal of Indian psychology*, *8*(2), 783-793. DOI: 10.25215/0802.094

Naseer, S., & Perveen, H. Z. (2023). Perspective chapter: Advantages and disadvantages of online learning courses. In Sam Goundar (Ed.), *Massive Open Online Courses - Current Practice and Future Trends* (pp. 1-10). IntechOpen. DOI: 10.5772/intechopen.1001343

Nyathi, M., & Sibanda, E. (2021). E-learning: Substitutability of Learner–Learner, and Learner–Facilitator Interactions to Enhance Learner Satisfaction in Higher Education. *International Journal of Educational Technology in Higher Education, 18*(1), 1-19. https://doi.org/10.1108/JRIT-04-2022-0018

Rahmat, N. H., Sukimin, I. S., Sim, M. S, Anuar, M. and Mohandas, E.S. (2021) Online Learning Motivation and Satisfaction: A Case Study of Undergraduates Vs Postgraduates. *International Journal of Asian Social Science, 11*(2), 88-97. http://dx.doi.org/10.18488/journal.1.2021.112.88.97

Selvanathan, M., Hussin, N. A. M., & Azizi, N. A. N. (2023). Students learning experiences during COVID-19: Work from home period in Malaysian Higher Learning Institutions. *Teaching Public Administration, 41(*1) 13–22. DOI: 10.1177/0144739420977900

Tan, K. H., Chan, P. P., Mohd Said, N. E. (2021). Higher Education Students' Online Instruction Perceptions: A Quality Virtual Learning Environment. *Sustainability*, *13*(19). 10840. https://doi.org/10.3390/su131910840

Xiulin, M., Yujuan, J., Chenyu, F., & Jing, L. (2021). Investigation on the influencing factors of online learning quality and research on its Improving Strategies. *Advances in Social Sciences Research Journal, 8*(5). 420-438. DOI:10.14738/assrj.85.10236

Yuhanna, I., Alexander, A., & Kachik, A. (2020). Advantages and disadvantages of Online Learning. *Journal Educational Verkenning, 1*(2), 13-19.

Zamani, N. D., Khalid, R. M., Shamala, P., Aziz, N. A., Othman, D., & Whanchit, W. (2022). Exploring learning environment online learning. *International Journal of Academic Research in Business and Social Sciences, 12*(10), 585 – 600. DOI:10.6007/IJARBSS/v12-i10/14772