Volume: 10 Issues: 78 Special Issue [November, 2025] pp. 1 - 14
Journal of Islamic, Social, Economics and Development (JISED)
eISSN: 0128-1755
Journal website: www.academicinspired.com/jised
DOI: 10.55573/JISED.107801

RECONSTRUCTION OF STUDENT ENGAGEMENT MODEL FOR COLLABORATIVE TECHNOLOGY

Nur Zharif Sofea Khairul Anuar[1*]
Noorihan Abdul Rahman[2]
Zuriani Ahmad Zukarnain[3]
Noor Ilanie Nordin[4]

[1] School of Computing Sciences, Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA Kelantan Branch, 18500 Machang, Kelantan, Malaysia
Email: 2021731485@student.uitm.edu.my
[2] School of Computing Sciences, Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA Kelantan Branch, 18500 Machang, Kelantan, Malaysia
Email: noorihan@uitm.edu.my
[3] School of Computing Sciences, Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA Kelantan Branch, 18500 Machang, Kelantan, Malaysia
Email: zurianiaz@uitm.edu.my
[4] Centre of Mathematical Sciences, Faculty of Computer and Mathematical Sciences, Universiti Teknologi MARA Kelantan Branch, 18500 Machang, Kelantan, Malaysia
Email: ilanie@uitm.edu.my
*Corresponding author: noorihan@uitm.edu.my

Article history
Received date : 4-10-2025
Revised date : 5-10-2025
Accepted date : 27-10-2025
Published date : 5-11-2025

To cite this document:
Khairul Anuar, N. Z. S., Abdul Rahman, N., Ahmad Zukarnain, Z., & Nordin, N. I. (2025). Reconstruction of student engagement model for collaborative technology. *Journal of Islamic, Social, Economics and Development (JISED),* 10 (78), 1 – 14.

Abstract: *Student engagement becomes one of the challenges in online education as proven by previous researchers. Student engagement goes down in online learning process. Online education is performed by using collaborative technology to accomplish teaching and learning tasks remotely. Since student engagement was found to affect students' performance in their learning, this study came out with a model that helps to determine features of collaborative technology that influence student engagement. Primarily, students who are interested in their learning tend to perform better and will exhibit enthusiasm toward what they learn. With the reference of social presence theory in constructing the model, there are several items are split into another variable to demonstrate the use of collaborative technology in online education activities. Besides, this model will shed a light on how to enhance student engagement by using collaborative technology in remote learning and diffusely will help to improve their potential in education.*

Keywords: *Student Engagement, Social Presence Theory, Online Learning, Collaborative Technology, Student Engagement Model*

Volume: 10 Issues: 78 Special Issue [November, 2025] pp. 1 - 14
Journal of Islamic, Social, Economics and Development (JISED)
eISSN: 0128-1755
Journal website: www.academicinspired.com/jised
DOI: 10.55573/JISED.107801

Introduction

The use of technology in this era has become a need to perform daily life activities since the year of 1990s. One of the technological developments nowadays is to be integrated into the education sectors as we can see most of the educational institutions are adopting online learning technologies to perform teaching and learning activities, sharing knowledge, and helps students in collaborating with their peers (Barrot et al., 2021). In the era of globalization, the use of technology is "capable of promoting human life" including education field. The process of teaching and learning are now can be carried outside the classroom and in distances (Ridho, 2020). According to Tung et al., (2021), educational institutions invested in technology makes education run better so more people can access it, feel confident learning, gain knowledge, spend less, learn more flexibly, and interact more. According to research by Maqbool et al., (2024), using social and collaborative technology helps students connect with each other, sharing ideas and learning together, both in real life and online.

Previously, collaborative technology was viewed as substitutes for in-person meetings for different locations, but nowadays collaborative technology becomes important as it is found to be helpful in sharing information from distance effectively with variety tools like note-marking, group chats, calendars, shared workspaces, private websites, mind maps, social bookmarks, file sharing, instant messaging, online meetings, wikis, and real-time collaboration tools (Fasola & Abimbola, 2023). The use of collaborative technologies provides students with easy access to online learning resources which help them to complete the learning tasks (Giang, 2023). According to Alyami et al., (2023), several studies found that the effectiveness of collaborative technologies in developing knowledge and sharing information proven by the high performance within interactive environments. Collaborative technologies offers several functionalities to perform group work, record progress and giving feedback towards the activities (Haleem et al., 2022). As said by Fitria et al., (2023), collaborative technology are proven to be beneficial in conducting collaborative learning activities. Online learning systems are one of the collaborative technology since it facilitates interaction between teachers and student and also between their peers (Maqbool et al., 2024).

Online learning usually explained in different terms which is distance learning, it can be describe as learning from distance. It also being called as e-learning or online education. Based on a study by Bączek et al., (2021), online learning is also called as open learning, web-based learning, computer-mediated learning, or blended learning. and e-learning. Next, online learning can be described as the use of technology in performing instructional and learning activities besides, there are several platforms that support the function of online learning such as WhatsApp, Google Classroom, Zoom meeting and more (Rahayu & Wirza, 2020). According to previous studies, a common definition of online learning is students are possible to learn anywhere, at any time, at any pace by connecting internet to technology. Besides, online learning gives a positive impact towards education for learners as it convenience, time savings, reduced cost, students can access the online materials anytime, it provides real-time interaction between students and teachers (Yuhanna et al., 2022). E-learning are found to be a great system in creating a creative and outstanding students who has self-reliance and requires less time (Farrah, 2023).

According to Rawashdeh et al., (2021), online learning is commonly implemented from elementary schools to post-secondary education. Students who are engaged in online learning process tend to have better understanding and perform better in their learning.

Volume: 10 Issues: 78 Special Issue [November, 2025] pp. 1 - 14
Journal of Islamic, Social, Economics and Development (JISED)
eISSN: 0128-1755
Journal website: www.academicinspired.com/jised
DOI: 10.55573/JISED.107801

Student engagement is found to be one of the crucial elements in performing online learning as it will affects their academic achievement. According to Chiu (2022), Student engagement means students are actively involved mentally and emotionally in learning as they put effort into schoolwork, participate in activities, commit to learning goals, and stay interested. This active engagement is key to doing well academically and achieving good educational results. Students engagement refers to "behavioral intensity and emotional quality of a person's active involvement during a task" (Huang & Wang, 2023). Briefly, student engagement means students' readiness to actively participate in the teaching-learning session. Student engagement is one of the most important factors that influence students' performance in their academic achievement. In learning activities, student engagement that are mediated by technology facing a challenge that hinder the effectiveness of online learning. Plus, student engagement is associated with important outcomes such as student satisfaction, perception of learning, and their learning persistence (Sayad et al., 2021).

However, simulating a classroom environment in online learning platforms using collaborative technology is a great challenge. Khan & Jamil (2022) mentioned that one of the challenges is to engage student since creating a successful online environment requires student to engage in learning. As example, student who feel disconnected do not engage in online learning. A study by Adolph (2024) explore the challenges of student engagement in online learning for a health professions education program mentioned that student engagement is a major issue faced in online education. The research found that encouraging student engagement through competitive environments and using special games can improve communication and cooperation. Anand & Gupta (2023) study a systematic review that examines the impact of online learning on student engagement and performance and providing comprehensive analysis of existing studies. the study found that other studies highlighted challenges such as decreased engagement and isolation, and reduced interaction with instructors and peers. The author also mentioned that maintaining student engagement remains a challenge and effective strategies to improve student engagement were critical in improving both engagement and performance.

Although the integration of technology into education has significantly enhanced accessibility, flexibility, and collaborative learning, it also presents notable challenges, particularly in sustaining student engagement. Numerous studies affirm the effectiveness of collaborative technologies—such as Google Classroom, Zoom, and other online platforms—in facilitating communication and supporting interactive learning environments. However, it is important to critically consider that not all students experience these benefits equally. Feelings of isolation, reduced interaction with instructors and peers, and lack of motivation remain prevalent issues in online learning settings. While strategies such as gamification and competitive learning have been proposed to increase engagement, their effectiveness may vary depending on learners' individual preferences and learning styles. Furthermore, although past research emphasizes the role of collaborative tools in improving educational outcomes, there is still a scarcity of in- depth studies that explore how to maintain consistent and meaningful student engagement over time. Therefore, future educational technology development should not only prioritize ease of access and content delivery, but also place greater emphasis on fostering emotional connection, social presence, and sustained participation among learners in digital learning environments.

According to Abou-Khalil et al., 2021, student engagement has been investigated many times in previous, but still there is limited literatures about the topic. As the past literature reviewed, the research regarding student engagement agreed that it is one of the predictors for their

Volume: 10 Issues: 78 Special Issue [November, 2025] pp. 1 - 14
Journal of Islamic, Social, Economics and Development (JISED)
eISSN: 0128-1755
Journal website: www.academicinspired.com/jised
DOI: 10.55573/JISED.107801

learning quality (Ayouni et al., 2021). Therefore, this study reconstructs the model for student engagement with the integration of collaborative technology.

Literature Review

In the evolving landscape of education, the integration of information technology (IT) has significantly transformed teaching and learning processes, particularly through the use of online and digital platforms. As learning environments shift from traditional classrooms to virtual spaces, understanding the key factors that influence learning effectiveness becomes increasingly important. Among these factors, student engagement, social presence, and collaborative technology have emerged as central themes in contemporary educational research. Student engagement, often regarded as a predictor of academic success, involves students' behavioral, emotional, and cognitive participation in learning activities. Meanwhile, Social Presence Theory, which refers to the ability of learners to project themselves socially and emotionally in an online environment, offers a useful lens to examine the quality of interaction in digital learning spaces. In parallel, collaborative technology such as learning management systems, video conferencing tools, and shared digital workspaces serves as a vital medium through which engagement and social presence are facilitated. This literature review explores the dimensions of student engagement, the application of Social Presence Theory, and the role of collaborative technology, highlighting their interconnectedness and significance within the IT-based educational context

Dimensions of Student Engagement

A study by Bergdahl (2022) explores Swedish teachers' understanding of student online engagement and disengagement found that student engagement are viewed in different dimensions according to different previous researchers. In the study mentions that some researchers viewed student engagement as two-dimensional in which affective or emotional, and behavioral dimensions. Meanwhile, another researcher in the study stated student engagement as three-dimensional which is affective or emotional, behavioral, and cognitive dimensions. Also, another researcher stated dimensions of student engagement are cognitive, academic, emotional and behavioral. Lastly some of them stated the dimensions are cognitive or academic, emotional and social or behavioral. Another study by Salas-Pilco et al. (2022) found that there are three dimensions of student engagement which are behavioral, emotional and cognitive. Based on literature reviewed, the dimensions of student engagement are mostly viewed as three-dimensional which is behavioral, emotional and cognitive. Each of them refers to different characteristics of engagement.

Nkomo (2022) mentioned that previous literature proposed the addition of another dimension which is agentic engagement for how students actively and constructively contributed to the learning environment. Agentic engagement are factors in students' ability in enhancing teaching and learning process. But the author stated that it can also viewed as the union between the cognitive engagement and behavioral engagement without needing to add another dimension. Another study by (Suqi Li, 2023) also added agentic engagement to the dimensions which stated that it is different from other dimensions. Also, the author mentions that students who are agentically engage in learning will self-regulated in learning to develop their skills and well perform in their learning. A study by (Xu et al., 2023) adopts four-dimensional framework of student engagement that consist of behavioral, emotional, cognitive, and agentic engagement to investigate student engagement in learning activities comprehensively. After reviewing

Volume: 10 Issues: 78 Special Issue [November, 2025] pp. 1 - 14
Journal of Islamic, Social, Economics and Development (JISED)
eISSN: 0128-1755
Journal website: www.academicinspired.com/jised
DOI: 10.55573/JISED.107801

several articles, this paper chose to follow in accordance of what has been said by (Nkomo, 2022).

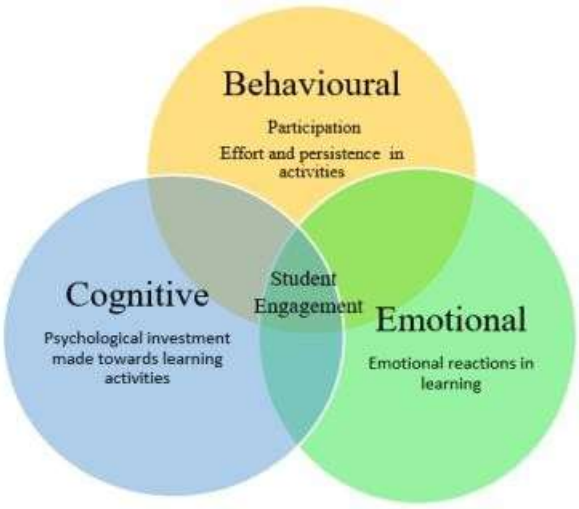

Figure 1: Dimension of student engagement
Source: Nkomo, 2021

Student engagement was mostly conceptualised along three dimensions: behavioural, cognitive, and emotional (Nkomo, 2022) as shown in the Figure 1. According to Su et al., (2024), student engagement interrelated dimensions includes behavioral engagement, emotional engagement, and cognitive engagement. The author also explained that behavioral engagement is students' physical engagement in learning activities, emotional engagement refers to students' emotional developments such as enjoyment and confidence, and cognitive engagement involves students' effort in contributing in understanding the course they learned. According to Salas-Pilco et al., (2022), behavioral engagement can be described as terms of participation, interaction, collaboration, achievement, performance, skill development and activity completion. Meanwhile, cognitive engagement defines students' motivation to learn, effort to understand, self-regulated learning and critical thinking. Lastly, emotional, or affective engagement refers to students' attitudes towards teachers, their peers, feelings of satisfaction, and a response to learning activities and environment.

By combining the three dimensions could provide a better understanding of students' engagement. Engagement includes behavioral, cognitive, and emotional parts. Behavioral engagement is about what students do like joining class, finishing work, and following rules. Cognitive engagement means they're mentally working planning, thinking hard, and going beyond what is required. Emotional engagement shows how they feel enjoying, valuing, and feeling connected to learning. Because these three parts overlap and influence each other, looking at only one gives an incomplete picture of how engaged students really are. That's why it's important to measure all dimensions to fully understand and support meaningful student engagement. (Nkomo, 2022).

Social Presence Theory

Back in 1976, Short, Williams, and Christie came up with the idea of 'social presence.' They said it means how much you feel the other person is really there during a conversation, and how strong that sense of relationship feels. They said it depends on two things: intimacy (like eye contact and closeness) and immediacy (like how emotionally close you feel). They also noticed

Volume: 10 Issues: 78 Special Issue [November, 2025] pp. 1 - 14
Journal of Islamic, Social, Economics and Development (JISED)
eISSN: 0128-1755
Journal website: www.academicinspired.com/jised
DOI: 10.55573/JISED.107801

that different communication methods (like talking face-to-face, via video, audio, or text) make you feel more or less presence (Gunawardena & Zittle, 1997). However, social presence has been under debate, as many of different definitions and measurement exist that prevent the development of the research field regarding social presence and its role in online group learning. To solve the issue, Kreijns et al., (2022) the author suggest to went back to the original social presence theory as invented by the communication researchers Short et al. (1976). Even though they clearly meant social presence as how 'real' someone seems in interaction, their definition remains vague, and it's hard to measure reliably.

A study by Biocca et al., (2002) review the state of social presence theory measurement and some criteria and scope for the use of social presence. The origins of this theory emphasis on the early social presence theory on the awareness of the representation of others, medium capacity for social interaction, and the presence and the absence of verbal or nonverbal in digital communication. Plus, the author said social presence theory studies how the sense of being with another is formed by connection. As a result of strategies in promoting the feeling of connectedness and belonging in collaborative learning, social presence becomes a factor to distance learning with their teachers and peers (So & Brush, 2008). Sevnarayan (2022) stated social presence as students feel connected and supported by their peers, teachers, and the learning environment.

Social presence means the basic sense that someone else is there or in other words, when ones feel a sign (like a sound, an action, or even a feeling) that shows another person is present and aware. Briefly, social presence means a person can feel and perceive the existence of others in remote learning to build a relationship. Besides, it can affect communication quality and information sharing behavior as a medium for exchanging ideas (Ming et al., 2024). Kreijns et al., (2022) states that social presence is important in online learning as it influences the way how the interactions online affect learning outcomes. Also, social presence is associated with the use of computer-mediated communication (CMC) tools as it gives the same energy of face- to-face communication, group learning or any activities that requires online group activities. Social presence explains 'the salience of human perception of others' communication in media and interpersonal interactions' that emphasizes communication and interaction in online environment (Chen & Liao, 2022). The author also stated that emotional support, sense of community, and interactivity can be the factors that affect social presence.

According to a study by Maphoto (2024) explores the elements of social presence theory as outlined by Garrison (2000) and Whiteside (2007) which includes affective association, knowledge and experience, interaction intensification, community cohesion, and instructor involvement. The author also mentioned that past researchers argue that social presence impacts student engagement and academic success in online learning and reinforces its role in learning outcomes. In simple terms, Whiteside (2015) explains that social presence is a key factor that connects all parts of online learning. It brings together teachers, students, course content, learning management systems (LMS), media, tools, teaching strategies, and learning outcomes. This connection helps create a more engaging and effective online learning experience. Maphoto (2024) presents a model of social presence in online and blended learning environments, identifying five key elements that contribute to creating a sense of connection and engagement among participants. Affective Association, Community Cohesion, Instructor Involvement, Interaction Intensity, Knowledge and Experience. These elements collectively contribute to a rich, interactive, and supportive online learning experience, emphasizing the

Volume: 10 Issues: 78 Special Issue [November, 2025] pp. 1 - 14
Journal of Islamic, Social, Economics and Development (JISED)
eISSN: 0128-1755
Journal website: www.academicinspired.com/jised
DOI: 10.55573/JISED.107801

importance of both emotional and cognitive connections in the learning process as shown in Figure 2.

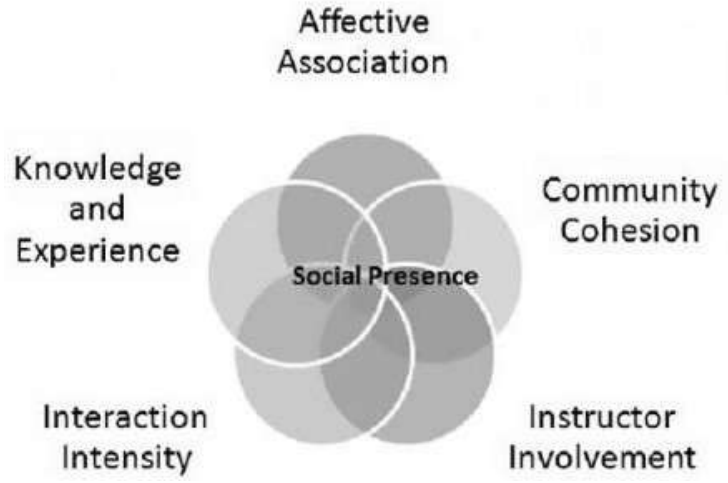

Figure 2: Social Presence Theory
Source: Whiteside, 2015

The affective association is an important role in shaping students' attitudes in their learning experiences. It includes the emotional and psychological connections between students and various stimuli, such as people, places, objects, or experiences. A positive affective relationships with teacher and their peers seems to be enhancing students' motivation, engagement, and academic achievement (Whiteside, 2015). This element relates to the connection among the use of emotions, language, self-disclosure, and use of humor. The variables are to build a sense of personality and characteristic for each student that can help others identify one another. This environment in virtual learning thereby improves the social presence effect (Maphoto, 2024). The affective association elements involve the emotional connections includes using emojis or emoticons, font style, and paralanguage.

Second element is community cohesion that refers to inclusive participation of all members of a community that involves greetings, sharing resources and information with each other, and perceive the group as a team (Ensmann & Gomez-vasquez, 2021). In order to promote community cohesion, both teachers and students should create a conducive online learning environment by using the words "we" instead of "you" or "they". other than that, the author also stated that building positive relationship online, offering support and feedback also helps for promoting this element (Maphoto, 2024). According to Balbuena et al., (2023), community cohesion is influenced by the level of friendship among individuals or groups. it is essential to create a positive and engaging online learning environment. as an effort to promotes this element, teachers may encourage group activities and collaborative projects.

Next element is instructor involvement which involves effort by the teachers including being friendly with students, customize learning environment and experience, offering timely feedback and reflecting on students' progress. all of these actions helps in developing a strong sense of community in online learning (Maphoto, 2024). As stated by Ensmann & Gomez- vasquez (2021), instructor involvement involves the actions taken by the instructor within the online learning environment and how students react to it. Previous researchers believes that instructor involvement is essential since it is requires the role of the teacher in making social

Volume: 10 Issues: 78 Special Issue [November, 2025] pp. 1 - 14
Journal of Islamic, Social, Economics and Development (JISED)
eISSN: 0128-1755
Journal website: www.academicinspired.com/jised
DOI: 10.55573/JISED.107801

connection online (Grech, 2022; Milovic & Dingus, 2021). The association of online teaching and learning needs regular feedback and communication. therefore, collaborative technology is one of the tools that provides the features for online chats, email, and sharing documents to interact with each other (SINGH & KAUR, 2022).

Interaction intensity is the fourth elements of social presence that brings the strategy from teachers in classroom to find personal connection and interaction with their students. therefore, online learning environment provides web of access for teachers and student to connect and interact with each other's online. There are several online platforms that can be used for engaging with student besides providing a dynamic environment (SINGH & KAUR, 2022). Interaction intensity are measures through the agreement, disagreement, compliments, and questions in the groups' interactions (Milovic & Dingus, 2021). Grech (2022) stated that this element encouraging participation and discussion with give-and-take, respect, trust and also acceptance. Teachers should aim to create more opportunities for student to participate in online learning for improving the interaction. It can be achieved by using existing online applications or platforms (Balbuena et al., 2023).

Lastly, the last element is knowledge and experience. According to Maphoto (2024), students' knowledge and experience assumed to be crucial role in shaping students ability to engage in online environment and encourage a sense of social presence. The author also states individuals with more knowledge and experience are more likely to engage in frequent interactions. Sharing knowledge and experiences allows both teachers and students to exchange resources and improve communication skills, enhancing the learning process. Therefore, online systems are developed to facilitate the sharing of knowledge and experiences, promoting a more interactive and effective learning environment (SINGH & KAUR, 2022). Grech (2022) agree that knowledge and experience is important for students in building online learning community. Students experience and knowledge impact social presence and student learning (Balbuena et al., 2023). Briefly, knowledge and experience primarily involve the knowledge and advance experience that the student brought into learning environment and what they share from their experience (Ensmann & Gomez-vasquez, 2021).

Collaborative Technology

Several studies have explored how university educators worldwide use collaborative technologies for teaching purposes. One of the growing approaches to integrating innovative digital tools in education is through the use of collaborative technologies. These technologies can be defined as digital tools that allow teachers to interact closely with their students, regardless of physical distance or location, in order to deliver instruction effectively and efficiently (Friday & Oviri, 2024). In addition, various empirical studies have identified specific areas where university instructors apply collaborative technologies during the teaching and learning process.

Several studies have highlighted the effectiveness of using collaborative technology in supporting knowledge development and sharing, with evidence showing improved performance in interactive learning environments (Alyami et al., 2023). Collaborative technology is designed to support the collaborative learning process across its various stages. In today's education system, technology plays a vital role in enhancing teaching and learning experiences. Overall, the impact of technology in collaborative learning settings has been viewed positively, with research showing that the use of collaborative tools can lead to higher academic achievement and greater student satisfaction.

Volume: 10 Issues: 78 Special Issue [November, 2025] pp. 1 - 14
Journal of Islamic, Social, Economics and Development (JISED)
eISSN: 0128-1755
Journal website: www.academicinspired.com/jised
DOI: 10.55573/JISED.107801

The use of collaborative technology has shown significant impact on user engagement and the overall quality of the learning experience. Existing studies have explored how collaborative technology supports activities such as sharing information, creating knowledge, and accessing digital resources in real time. Collaboration can be understood as a process that involves working together, learning from one another, and sharing ideas. It mainly focuses on educational activities such as teaching, learning, and studying, where knowledge is exchanged and developed among participants (Obim, 2024). Therefore, it is important to understand how digital platforms and collaborative technologies influence the level of engagement among users in learning environments.

Reconstruction of Student Engagement Model for Collaborative Technology

The aim of this paper is to explain how existing model of student engagement combined with social presence theory element in building new model. This research model is constructed according to factors that influence student engagement in an online learning environment. For this model, this study adopts all the items in social presence theory as the independent variables, but there are two items that were split under another independent variable which is collaborative technology since it is related to the scope of technology. The model for this study is formed as shown in Figure 3 below as it describes the connection between variables that represents the research model used to investigate student engagement towards the use of collaborative technologies. Furthermore, each of the items are used to construct questionnaires in order to make a survey for this study as the measurement of student engagement. Plus, this study measures student engagement in all different dimensions.

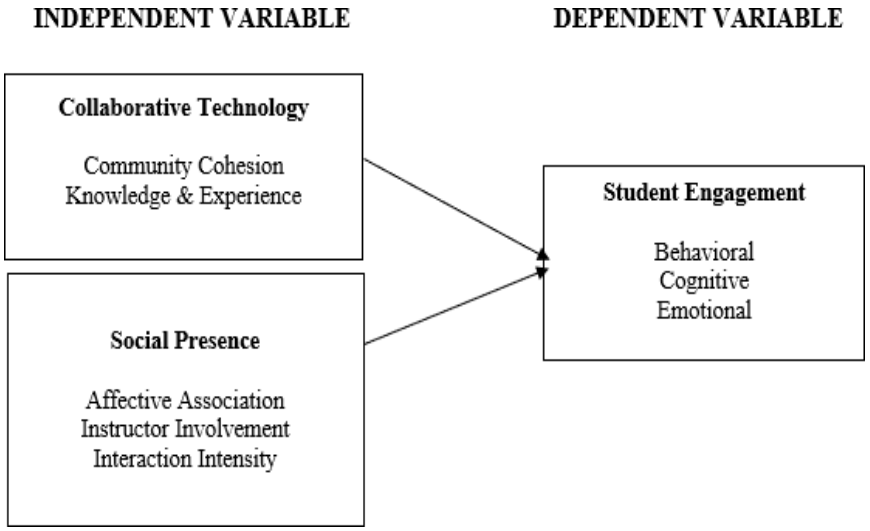

Figure 3: Reconstructed Student Engagement Model

By including collaborative technology as a separate variable, the model reflects the increasing importance of digital tools in shaping learning experiences. The decision to separate certain items under collaborative technology allows for a more focused analysis of how specific technological tools influence engagement. This approach also helps to highlight the role of technology in supporting social interaction, communication, and collaboration among students. The model is designed to examine how different factors work together to affect student engagement across its various dimensions such as behavioral, emotional, and cognitive. Using this model, the study develops a set of survey questions to collect data and measure how students interact with collaborative technologies and how these interactions contribute to their learning involvement in

Volume: 10 Issues: 78 Special Issue [November, 2025] pp. 1 - 14
Journal of Islamic, Social, Economics and Development (JISED)
eISSN: 0128-1755
Journal website: www.academicinspired.com/jised
DOI: 10.55573/JISED.107801

an online environment.

Results and Findings

Reliability is an important measure to determine how stable and consistent the results are when the same tool is used repeatedly. In this study, reliability was assessed using Cronbach's Alpha, which shows how closely related the items within each scale are. Table 1 presents the reliability results for the three key variables: collaborative technology, social presence, and student engagement. All variables showed strong reliability, with Cronbach's Alpha values above the accepted threshold of 0.70. Specifically, collaborative technology scored 0.856, social presence scored 0.925, and student engagement scored 0.894. These high scores suggest that the items used in the questionnaire for each variable are consistent and measure the same concept effectively.

The strong reliability results also show that the survey tool used in this study accurately reflects the research model, which focuses on the relationship between collaborative technology, social presence, and student engagement. These three variables are not only related in theory but are also clearly supported by the data collected through the questionnaire. The high level of internal consistency confirms that the survey instrument is suitable for further analysis and can be used to better understand how students engage with online learning. This adds strength to the study and contributes useful insights to research in digital education.

The Cronbach's Alpha value of 0.856 for collaborative technology shows that the related questions consistently measure students' views and experiences with digital tools used for learning. This indicates a strong link between the items, making the results reliable for understanding how these technologies support student interaction in online learning. The higher score of 0.925 for social presence suggests a very strong connection among the items measuring how socially connected students feel during online learning. A clear sense of social presence can improve communication and motivation, so measuring it accurately is important for this research. For student engagement, the score of 0.894 confirms that the questionnaire items effectively capture different aspects of engagement, including how students behave, feel, and think while learning online.

In summary, these findings demonstrate that the survey instrument produces reliable and consistent data, which is essential for making accurate conclusions. The high internal consistency also reduces the chance of measurement errors, allowing for stronger analysis and better understanding of the relationships between collaborative technology, social presence, and student engagement. This provides a solid base for the current research and supports future studies in the area of online and digital learning environments.

Table 1: Reliability results

Variables	Cronbach's Alpha Value
Collaborative technology	0.856
Social presence theory	0.925
Student engagement	0.894

Discussion

The high reliability scores for all three variables—collaborative technology, social presence, and student engagement—demonstrate that the measurement tool used in this study is both consistent and trustworthy. This is important because reliable data is essential for making meaningful interpretations about the relationships among these variables. The strong internal consistency indicates that the items used to assess each concept are well-aligned and successfully capture the intended aspects of the study. For example, the items under collaborative technology effectively

Volume: 10 Issues: 78 Special Issue [November, 2025] pp. 1 - 14
Journal of Islamic, Social, Economics and Development (JISED)
eISSN: 0128-1755
Journal website: www.academicinspired.com/jised
DOI: 10.55573/JISED.107801

measure students' interactions with digital tools, while the items under social presence clearly reflect students' sense of connection in the online environment. These findings support the structure of the research model and provide confidence in the results of later analysis.

Moreover, the reliability outcomes reinforce the relevance of using collaborative technology and social presence as key elements in understanding student engagement in online learning. Since all three constructs show high reliability, this suggests that students are able to clearly identify and respond to each concept based on their real learning experiences. This not only supports the validity of the study but also highlights the importance of designing digital learning environments that promote strong social interaction and effective use of technology. The results also suggest that when collaborative tools are used well, and when learners feel socially connected, they are more likely to be engaged in their learning tasks. These insights are valuable for educators, instructional designers, and institutions aiming to improve the quality of online education and support student success in technology-based learning environments.

Conclusion

In recent years, the rapid growth of online learning has led to new challenges in maintaining student engagement. As more educational activities shift to digital platforms, it becomes essential to explore new approaches that can support active participation and meaningful interaction in virtual learning environments. One promising direction is the use of collaborative technology to enhance student engagement.

This paper aims to explain the development of a new student engagement model by modifying and expanding an existing framework to better suit online learning contexts. After reviewing previous literature and related studies, this paper presents a structured model that is designed to improve engagement among students in digital settings. The model is expected to support both teachers and students by providing a guide for fostering stronger interaction and connection during online learning activities. It may also serve as a practical tool for daily educational use and as a reference for future research and implementation in similar contexts.

Acknowledgements

Suggestion for Future Research

It should be reminded that this paper has limitations that should be addressed and investigated in future research. the limitation is more on the method of reviewing past literature which means that there will still be more articles that has not been reviewed. Moreover, this paper is focusing on how the author comes out with the new model for student engagement in online learning environment. Plus, this paper only provides information to be apply in online classroom that requires the use of collaborative technology. Future research is suggested to contribute more in the context of student engagement with broad view of another existing model.

Co-Author Contribution

Author1 has defining the issues in online learning that is related to social presence and prepared the literature review. Author2 provide guidance in writing up the whole article. Author3 assist in the reconstruction of the model with student engagement model variables. Author4 helps in carried out the analysis for both variables in the model.

Volume: 10 Issues: 78 Special Issue [November, 2025] pp. 1 - 14
Journal of Islamic, Social, Economics and Development (JISED)
eISSN: 0128-1755
Journal website: www.academicinspired.com/jised
DOI: 10.55573/JISED.107801

Acknowledgements

I appreciate all the authors that contribute in providing advice, data, and MARA University of Technology that provides resources and support. Also, thanks to anonymous reviewers and editors for their contribution.

References

Abou-Khalil, V., Helou, S., Khalifé, E., Chen, M. A., Majumdar, R., & Ogata, H. (2021). Emergency online learning in low-resource settings: Effective student engagement strategies. *Education Sciences*, *11*(1), 1–18. https://doi.org/10.3390/educsci11010024

Adolph, R. (2024). *Overcoming Challenges Of Student Engagement In Online Health Professions Education - An Exploratory, Qualitative Study*. 1–23.

Alyami, A., Pileggi, S. F., & Hawryszkiewycz, I. (2023). Knowledge development, technology and quality of experience in collaborative learning: a perspective from Saudi Arabia universities. *Quality and Quantity*, *57*(4), 3085–3104. https://doi.org/10.1007/s11135- 022-01476-9

Anand, R., & Gupta, N. (2023). Impact of Online Learning on Student Engagement and Academic Performance. *Praxis International Journal of Social Science and Literature*, *6*(7), 29–40. https://doi.org/10.51879/pijssl/060703

Ayouni, S., Hajjej, F., Maddeh, M., & Alotaibi, S. (2021). Innovations of materials for student engagement in online environment: An ontology. *Materials Today: Proceedings*, *81*(2), 470–476. https://doi.org/10.1016/j.matpr.2021.03.636

Bączek, M., Zagańczyk-Bączek, M., Szpringer, M., Jaroszyński, A., & Wożakowska-Kapłon, B. (2021). Students' perception of online learning during the COVID-19 pandemic: A survey study of Polish medical students. *Medicine (United States)*, *100*(7), E24821. https://doi.org/10.1097/MD.0000000000024821

Balbuena, A. S., Grace, M., Bautista, M., Pineda, F. G., & Ph, D. (2023). *Asynchronous Connection : Exploring the Impact of Social Presence , Motivation , and Satisfaction*. 24– 30.

Barrot, J. S., Llenares, I. I., & del Rosario, L. S. (2021). Students' online learning challenges during the pandemic and how they cope with them: The case of the Philippines. *Education and Information Technologies*, *26*(6), 7321–7338. https://doi.org/10.1007/s10639-021- 10589-x

Bergdahl, N. (2022). Engagement and disengagement in online learning. In *Computers and Education* (Vol. 188). https://doi.org/10.1016/j.compedu.2022.104561

Biocca, F., Lansing, E., & Harms, C. (2002). *Toward a More Robust Theory and Measure of Social Presence : Review and Suggested Criteria*. *12*(5), 456–480.

Chen, J., & Liao, J. (2022). *Antecedents of Viewers ' Live Streaming Watching : A Perspective of Social Presence Theory*. *13*(March), 1–11. https://doi.org/10.3389/fpsyg.2022.839629

Chiu, T. K. F. (2022). Applying the self-determination theory (SDT) to explain student engagement in online learning during the COVID-19 pandemic. *Journal of Research on Technology in Education*, *54*(S1), S14–S30. https://doi.org/10.1080/15391523.2021.1891998

Ensmann, S., & Gomez-vasquez, L. (2021). *Connections Before Curriculum : The Role of Social Presence During COVID-19 Emergency Remote Learning for Students*. *25*(3), 36–56. https://doi.org/10.24059/olj.v25i3.2868

Farrah, M. (2023). *Erudita : Journal of English Language Teaching EFL teachers ' attitudes towards online learning in Palestinian high schools during the COVID-19 pandemic*. *2*(2), 94–114.

Fasola, O. S., & Abimbola, M. O. (2023). Collaborative technology for information sharing, knowledge creation and management in libraries. *Gateway Information Journal*, *24*(1 & 2), 33–46. https://www.gatewayinfojournal.org/index.php/gij/article/view/34

Fitria, R., Trisnawati, I. K., & Mulyani, M. (2023). What Indonesian EFL Learners Perceive of Collaborative Writing: Experience in Writing Essays Online. *English Education Journal*, *14*(1), 493–516. https://doi.org/10.24815/eej.v14i1.29227

Volume: 10 Issues: 78 Special Issue [November, 2025] pp. 1 - 14
Journal of Islamic, Social, Economics and Development (JISED)
eISSN: 0128-1755
Journal website: www.academicinspired.com/jised
DOI: 10.55573/JISED.107801

Friday, J. E., & Oviri, U. B. (2024). Collaborative Technology Adoption in Teaching Library and Information Science in Nigerian Universities. *International Journal of Information, Library and Society*, *13*(1), 22–34.

Giang, H. L. T. (2023). Pre-service EFL teachers' perceptions of online Community of Inquiry in computer-mediated synchronous collaborative technology using Google Docs. *VNU Journal of Foreign Studies*, *39*(2), 1–21.

Grech, J. (2022). *Exploring nursing students ' need for social presence and its relevance to their learning preferences*. *January*, 1643–1652. https://doi.org/10.1002/nop2.1189

Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, *3*(May), 275–285. https://doi.org/10.1016/j.susoc.2022.05.004

Huang, Y., & Wang, S. (2023). How to motivate student engagement in emergency online learning? Evidence from the COVID-19 situation. *Higher Education*, *85*(5), 1101–1123. https://doi.org/10.1007/s10734-022-00880-2

Khan, S., & Jamil, B. (2022). Challenges in Engaging Students during an Online Health Professions Education Course: An Exploratory, Qualitiative Study. *Pakistan Journal of Medical and Health Sciences*, *16*(5), 1151–1154. https://doi.org/10.53350/pjmhs221651151

Kreijns, K., Xu, K., & Weidlich, J. (2022). *Social Presence : Conceptualization and Measurement*. Educational Psychology Review.

Maphoto, K. B. (2024). *Perceptions and innovations of academics in an open distance e- learning institution*. *14*(2), 1–17.

Maqbool, M. A., Asif, M., Imran, M., Bibi, S., & Almusharraf, N. (2024). Emerging E-learning trends: A study of faculty perceptions and impact of collaborative techniques using fuzzy interface system. *Social Sciences and Humanities Open*, *10*(July), 101035. https://doi.org/10.1016/j.ssaho.2024.101035

Milovic, A., & Dingus, R. (2021). *How To Not Disappear Completely : Using Video-based Discussions to Enhance Student Social Presence in an Online Course*.

Ming, T., Peggy, W., Mei, N., & Low, P. (2024). Engaging university students in online learning : a regional comparative study from the perspective of social presence theory. *Journal of Computers in Education*, *11*(3), 763–789. https://doi.org/10.1007/s40692-023- 00278-8

Nkomo, L. M. (2022). *STUDENTS ' ENGAGEMENT PATTERNS WITH DIGITAL LEARNING TECHNOLOGIES : AN EMPIRICAL CASE OF LECTURE RECORDINGS Doctor of Philosophy*.

Obim, I. E. (2024). *IMPACT OF COLLABORATIVE TECHNOLOGY FOR INFORMATION SERVICES IN*. *October*.

Rahayu, R. P., & Wirza, Y. (2020). Teachers' Perception of Online Learning during Pandemic Covid-19. *Jurnal Penelitian Pendidikan*, *20*(3), 392–406. https://doi.org/10.17509/jpp.v20i3.29226

Rawashdeh, A. Z. Al, Mohammed, E. Y., Arab, A. R. Al, Alara, M., & Al-Rawashdeh, B. (2021). Advantages and disadvantages of using E-learning in university education. *Electronic Journal of E-Learning*, *19*(2), 107–117. https://academic-publishing.org/index.php/ejel/article/view/2168

Ridho, A. (2020). Exploring EFL Students ' Perception of Online Learning via Microsoft Teams : University Level in Indonesia. *English Language Teaching Educational Journal*, *3*(2), 163–173.

Salas-Pilco, S. Z., Yang, Y., & Zhang, Z. (2022). Student engagement in online learning in Latin American higher education during the COVID-19 pandemic: A systematic review. *British Journal of Educational Technology*, *53*(3), 593–619. https://doi.org/10.1111/bjet.13190

Sayad, G. El, Hasliza, N., & Ramayah, S. (2021). How higher education students in Egypt

Volume: 10 Issues: 78 Special Issue [November, 2025] pp. 1 - 14
Journal of Islamic, Social, Economics and Development (JISED)
eISSN: 0128-1755
Journal website: www.academicinspired.com/jised
DOI: 10.55573/JISED.107801

perceived online learning engagement and satisfaction during the COVID - 19 pandemic. *Journal of Computers in Education*, *8*(4), 527–550. https://doi.org/10.1007/s40692-021-00191-y

Sevnarayan, K. (2022). *Reimaging eLearning technologies to support students : On reducing transactional distance at an open and distance eLearning institution*. *19*(4), 421–439. https://doi.org/10.1177/20427530221096535

Singh, P., & Kaur, I. A. (2022). *Education , Health And Social Change Walking Through The Road Of Transformation*.

So, H., & Brush, T. A. (2008). *Student perceptions of collaborative learning , social presence and satisfaction in a blended learning environment : Relationships and critical factors*. *51*, 318–336. https://doi.org/10.1016/j.compedu.2007.05.009

Su, F., Zou, D., Wang, L., & Kohnke, L. (2024). Student engagement and teaching presence in blended learning and emergency remote teaching. *Journal of Computers in Education*, *11*(2), 445–470. https://doi.org/10.1007/s40692-023-00263-1

Suqi Li, K. X. & J. H. (2023). *Exploring the influence of teachers' motivating styles on college students' agentic engagement in online learning - The mediating and suppressing effects of self-regulated learning ability.pdf*.

Tung, T. Van, Thao, N. N. N., & Hai, T. P. (2021). Accounting students' perceptions of online learning in the age of industry 4.0. *Management Science Letters*, *11*, 417–424. https://doi.org/10.5267/j.msl.2020.9.027

Whiteside, A. L. (2015). *Introducing the Social Presence Model to Explore Online and Blended Learning Experiences*. 4–5.

Xu, X., Shi, Z., Bos, N. A., & Wu, H. (2023). Student engagement and learning outcomes : an empirical study applying a four-dimensional framework. *Medical Education Online*, *28*(1). https://doi.org/10.1080/10872981.2023.2268347

Yuhanna, I., Alexander, A., & Kachik, A. (2022). Advantages and disadvantages of Online Learning. *Journal Educational Verkenning*, *1*(2), 13–19. https://doi.org/10.48173/jev.v1i2.54