

Title: Evaluating the Impact of Online Mentoring Sessions on Student Engagement

Tharanee De Silva, Vishaka Nanayakkara, Buddhika Karunaratne and Jageshkar Sivahar
University of Moratuwa, Colombo, Sri Lanka

tharaneesarangika@gmail.com

vishaka@cse.mrt.ac.lk

buddhika@cse.mrt.ac.lk

jageshkar@gmail.com

Abstract: Asynchronous learning offers flexibility but often struggles to maintain high levels of student engagement, particularly among first-year undergraduates. This study examines the impact of online mentoring sessions on student engagement in an asynchronous course delivered to first-semester students enrolled in the Bachelor of Information Technology (BIT) programme at the University of Moratuwa. The BIT programme, conducted in the open and distance mode, does not provide synchronous live lectures for any of the modules. However, the students have often shown interest in getting more assistance with live interactions. Taking the increasing student concerns into consideration, an online mentoring session was proposed. An instructor would conduct a 1.5 hour online synchronous session for each module starting from the first semester. Instructors were selected based on their specialization on the module content. From the logistics perspective, this introduced additional burden on the resource persons who are already loaded with work. The need for an evaluation of the effectiveness of the newly introduced programme was identified. In that regard, a mixed-methods approach was employed, combining LMS activity data with student surveys and feedback. The intends to provide insight on the effects on student engagement following the introduction of online mentoring, particularly in areas such as student view content in around the first three weeks. The delivery of mentoring sessions provides insights of student engagement: enhancing comprehension, confidence, and inclusivity. The study underscores the potential of culturally and linguistically responsive online mentoring to improve student engagement in asynchronous learning environments, particularly in diverse educational contexts. The preliminary results indicate that students with access to the online mentoring program exhibited higher engagement, with an increase in the number of content views and interactions. Specifically, the presence of a mentor led to an approximate 5% increase in student engagement, suggesting that personalized support positively influences students' interaction with course materials. The findings highlight the importance of mentorship in enhancing student participation in online learning environments.

Keywords: Online Mentoring, Student Engagement, Asynchronous Learning

1. Introduction

The Bachelor of Information Technology (BIT) programme at the University of Moratuwa, administered by the Centre for Open and Distance Learning (CODL), is a three-year undergraduate degree tailored for students who have completed the (General Certificate of Education) GCE Advanced Level examination in Sri Lanka. This programme is delivered entirely through asynchronous methods via the Moodle learning management system, offering access to recorded lectures, digital course materials, and both formative and summative assessments. While the asynchronous format provides flexibility and accessibility, students—particularly those in their first semester have frequently voiced the need for more direct interaction with instructors to clarify concepts, engage in discussions, and receive timely academic support. Accordingly, this study focuses specifically on first-semester students, as the structured online mentoring sessions were introduced only for this group.

In response to these concerns, the programme introduced a structured online mentoring initiative, wherein each module was supplemented with a 1.5-hour synchronous session conducted by subject-matter experts. These sessions aimed to bridge the interaction gap inherent in asynchronous learning by providing a platform for real-time engagement, discussion, and personalized support. While the implementation of these sessions introduced additional responsibilities for instructors, the potential benefits in enhancing student engagement warranted a thorough evaluation.

This study aims to assess the effectiveness of the online mentoring sessions in improving student engagement within the BIT programme. Employing a mixed-methods approach, the research analyses data from the Learning Management System (LMS) to track student interactions and complements this with surveys and feedback to capture student perceptions.

In line with the aim of the study, the following research objectives were identified.

1.1 Research Objectives

1. (RO1) To evaluate the effect of online mentoring sessions on student engagement in an asynchronous learning environment.
2. (RO2) To explore how online mentoring contributes to various aspects of student engagement, focusing specifically on students' interaction with content, levels of intrinsic motivation, and frequency of participation in academic tasks.
3. (RO3) To compare engagement levels between students who participated in online mentoring sessions and those who did not.

2. Literature Review

The integration of digital technologies into education has reshaped how student support is delivered, particularly in online and distance learning. One of the most promising strategies for enhancing learner engagement in these settings is online mentoring. By providing flexible, personalized academic support, online mentoring helps bridge the gap between asynchronous content delivery and active student participation (Enwereji and Van Rooyen, 2024).

Despite its benefits, student engagement with mentoring services remains uneven. Enwereji and Van Rooyen (2024), in a study at the University of South Africa, discovered significant behavioural differences between individuals who participate in e-tutoring and mentoring and of those who don't, identifying gaps in awareness and service design. This suggests that beyond content delivery, structured support services are critical to increase participation and preventing dropouts in virtual learning environments.

The importance of mentoring in supporting students emotionally and academically is well documented. Andersen and West (2021) identified four core domains through which online mentoring benefits learners: emotional support, academic goal setting, role modelling, and technological guidance. The most effective support was found to be emotional and psychological, especially for non-traditional or transitional students who frequently experience uncertainty and loneliness in digital environments.

Peer mentoring is another approach that contributes meaningfully to student engagement. Edwards et al. (2021) examined an online peer mentoring initiative at the Open University, where student-led design and co-creation fostered a sense of ownership and empowerment. The program helped reduce feelings of isolation, created learning communities, and supported academic progress, underscoring the social dimensions of engagement that mentoring can support.

Mentoring programs have also shown significant results among first-year undergraduates. Queiruga-Dios et al. (2023) reported that structured mentoring activities at Spanish universities promoted critical thinking, proactivity, and self-awareness. In particular, the mentoring program at Universidad Francisco de Vitoria resulted in apparent increases in motivation and academic confidence, both of which are significant measures of engagement.

The COVID-19 pandemic provided a natural stress test for online education. Spitzer et al. (2021), using survival analysis, showed that while platform enrolment spiked during school closures, sustained engagement was harder to maintain. These findings support the idea that mentorship, particularly with constant, structured interaction, may help maintain continuity and motivation in unpredictable or completely remote learning environments.

The design and delivery of mentoring programs matter greatly. Sherman and Camilli (2014) emphasized that clearly defined mentoring responsibilities (e.g., feedback, planning, support logs) contributed to more effective learning outcomes. Similarly, Maré and Mutezo (2021), applying the Community of Inquiry framework, found that e-tutoring with mentoring components improved academic performance and reduced learner isolation in open and distance learning settings.

Collectively, these studies highlight that online mentoring plays a central role in fostering student engagement, particularly in asynchronous and distance education contexts. It supports emotional well-being, promotes academic responsibility, and facilitates meaningful connections between learners and mentors. However, the success of such initiatives depends on mentor training, technological infrastructure, and strategic program design (Andersen and West, 2021). Mentoring should be viewed as a basic component of student engagement efforts as universities expand their digital learning offerings.

3. Methodology

3.1 Data Collection

Student activity and performance details of a Semester 2 module (ITE1223) were collected from the Moodle LMS. This module had one mentor who conducted the online mentoring sessions.

Group A includes students who did **not attend** any online mentoring sessions, while **Group B** consists of students who **participated** in online mentoring. This classification helps compare engagement levels based on the presence or absence of mentoring support.

Table 1:

Module	Group A		Group B	
	Views per registered students - 720		Views per registered students - 1283	
1st Lesson	1642	2.281	2958	2.306
2nd Lesson	996	1.383	1832	1.428
3rd Lesson	656	0.911	2024	1.578

This diagram presents engagement data from two distinct student groups: Group A with 720 registered students and Group B with 1,283 registered students. The analysis focuses on the average number of views per student for the first three lessons. In Group A, the 1st Lesson received 1,642 views, resulting in an average of 2.281 views per student. The 2nd Lesson garnered 996 views (1.383 views/student), while the 3rd Lesson had 656 views (0.911 views/student), indicating a gradual decline in engagement across lessons.

In contrast, Group B displayed consistently higher engagement, with 2,958 views for the 1st Lesson (2.306 views/student), 1,832 for the 2nd Lesson (1.428 views/student), and 2,024 for the 3rd Lesson (1.578 views/student). This group not only maintained stronger engagement over time but also exhibited a noticeable increase in 3rd Lesson views compared to Group A.

The data suggest that Group B presumably the group that experienced online mentoring interventions demonstrated greater and more sustained engagement with the learning materials. This supports the notion that online mentoring has a positive effect on student motivation and involvement, fulfilling the objective of identifying its impact on engagement within the target group.

3.2 Data Analysis

Tableau is a powerful and user-friendly data visualization and analytics software that enables users to analyze large and complex datasets with ease. It is widely regarded as one of the leading tools in the field of data analytics due to its ability to transform raw data into interactive, insightful visualizations such as charts, graphs, dashboards, and maps. Tableau supports a wide range of data sources, including Excel, SQL databases, cloud services, and big data platforms, making it highly flexible and adaptable to various research and business needs. One of Tableau's key strengths is its drag-and-drop interface, which allows even non-technical users to explore data and uncover patterns, trends, and correlations without needing to write code. Additionally, Tableau enables real-time data analysis and provides tools for predictive analytics, helping users make data-driven decisions efficiently. Its ability to present findings in a clear, visual format enhances understanding and communication of insights, making Tableau an excellent tool for both quantitative and qualitative data analysis in academic, business, and research environments.

A key contribution is its guidance on interpreting the statistical summaries generated by Tableau. The analysis is grounded in a dataset that includes Market Risk Premium data from seven Latin American countries Argentina, Brazil, Chile, Mexico, Peru, and Uruguay—spanning from 2012 to 2018. The paper is structured in three sections:

an overview of the dataset, a detailed explanation of how to create and analyse trend line models in Tableau, and a concluding section summarizing key insights. (Salgador, 2018)

RO1: To evaluate the effect of online mentoring sessions on student engagement in an asynchronous learning environment.

To evaluate the effect of online mentoring sessions on student engagement, viewership data for the 4th and 5th lessons both covered during online mentoring sessions were analysed. The comparison between engagement levels before and after the mentoring sessions reveals a substantial increase in both the number of views and unique users. For the 4th lesson, the number of views rose from 585 to 1,416, while unique users increased from 262 to 456. Similarly, the 5th lesson experienced an increase from 327 to 890 views and from 166 to 363 users. These figures represent more than double the engagement in both lessons after the introduction of mentoring. This suggests that the presence of mentors encouraged more students to revisit and interact with the learning content. The notable growth in views and unique participation indicates that online mentoring sessions had a significant positive impact on student engagement, supporting the objective of enhancing student interaction and motivation through structured academic support.

Table 2:

Module	Before the Introduction of Online Mentoring		After the Introduction of Online Mentoring	
4th Lesson	585 Viewers	262 users	1416 views	456 users
5th Lesson	327 viewers	166 users	890 views	363 users

RO2: To explore how online mentoring contributes to various aspects of student engagement, focusing specifically on students' interaction with content, levels of intrinsic motivation, and frequency of participation in academic tasks.

Analysis of the attendance who participate in the online mentoring session by Questionnaire and looking here how can students' attitude pertaining to the online learning environment be influenced by e-mentoring.

- self-paced,
- teacher as assisted mentor
- multimedia instruction

Online mentoring is essential for improving many facets of student involvement, especially for adult learners enrolled in distance learning programs. A study was carried out at the School of Distance Education, University Sains Malaysia, to investigate how students' perceptions of various aspects of the online learning environment like multimedia instruction, teacher-assisted tutoring, and self-paced learning influence their engagement, contentment, and perceived worth of working with e-mentors. (Omar et al., 2012) To achieve the objective of exploring how online mentoring contributes to various aspects of student engagement particularly learners' interaction with content, intrinsic motivation, and participation frequency the study examined three key elements of the online learning environment: self-paced learning, teacher as assisted tutor, and multimedia instruction. Each of these dimensions aligns with different facets of engagement and offers insight into how online mentoring enhances learner experience.

Self-paced learning allows students to engage with content on their own schedule, accommodating individual learning preferences and personal responsibilities. This flexibility supports intrinsic motivation by empowering students to take ownership of their progress. When paired with online mentoring, students are more likely to remain consistent in their academic tasks, as mentors provide direction, accountability, and encouragement, thus reinforcing sustained participation.

Teacher as an assisted tutor plays a crucial role in maintaining students' connection to the course. Online mentoring in this model ensures timely feedback, personalized guidance, and emotional support. This interpersonal interaction enhances students' sense of belonging and commitment to their studies. With a

mentor available for academic and motivational support, students feel less isolated in an online environment and are more engaged in content discussions, forums, and assignments.

Multimedia instruction increases interactivity and caters to diverse learning styles, which directly influences content engagement. Videos, animations, and interactive modules make learning more stimulating and enjoyable, especially when mentors guide students on how to navigate and interpret these resources effectively. Online mentors can further contextualize multimedia content, fostering deeper cognitive engagement and a richer understanding of material.

Together, these three elements when facilitated through structured online mentoring demonstrate a synergistic effect that enhances students' engagement levels. Students not only interact more frequently with academic content but also exhibit higher motivation and greater consistency in their academic participation. Thus, online mentoring proves to be a valuable approach in supporting student engagement in a digital learning environment.

The pie chart generated using Tableau software illustrates the perceived impact of online mentoring sessions on students' course understanding, based on responses from a questionnaire. The participants were asked to rate the level of help they received from the online mentoring sessions. The questionnaire was conducted anonymously. According to the chart, 38.10% of students indicated that the sessions "greatly helped" them in understanding the course material, showing a strong positive response to the effectiveness of online mentoring. The largest segment, 47.62%, responded that the sessions "somewhat helped", suggesting that nearly half of the participants found the support beneficial, though not transformative. Only 14.29% of respondents remained neutral, indicating minimal impact or uncertainty regarding the value of the sessions.

These findings suggest that the online mentoring sessions were largely effective in enhancing course understanding for a majority of the students. When combined with insights from self-paced learning, teacher-guided instruction, and multimedia use, the mentoring support appears to play a significant role in fostering content engagement and improving academic clarity. The data supports the value of structured online mentoring to strengthen students' learning outcomes and motivation in a distance education setting.

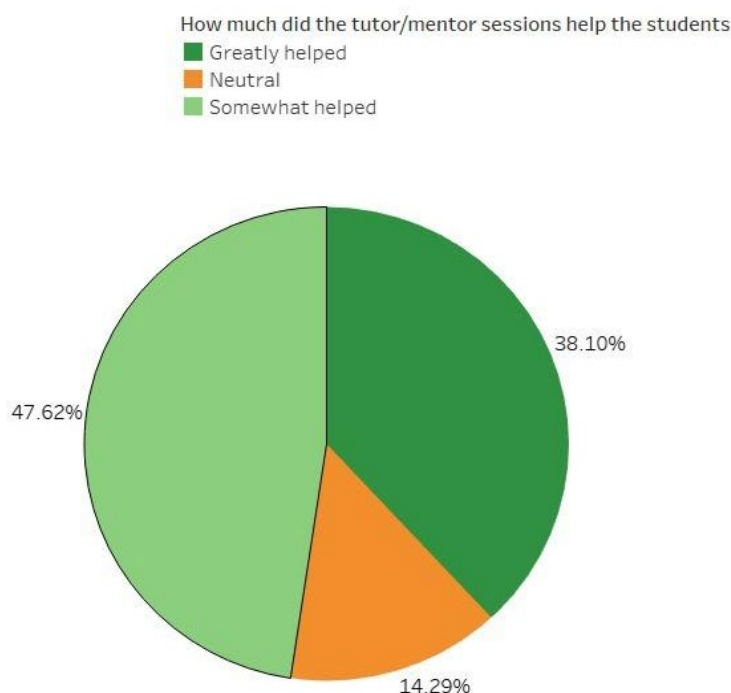


Figure 1: Impact of sessions on the learning experience

RO3: To compare engagement levels between students who participated in online mentoring sessions and those who did not.

To achieve the objective "To compare engagement levels between students who participated in online mentoring sessions and those who did not", the bar chart generated using Tableau clearly illustrates the relationship between session attendance and practical performance outcomes in module ITE 1223.

The data shows that students who attended 4–5 sessions achieved the highest average practical marks (68.75), indicating a strong correlation between moderate engagement in online mentoring sessions and academic success. Students who attended more than 5 sessions also performed well with an average of 62.40 marks, reinforcing the value of sustained engagement.

Interestingly, students who did not attend any sessions still managed a relatively high average score of 59.13, suggesting they may have relied on other learning methods such as self-paced or peer-supported study. In contrast, students who attended 2–3 sessions scored the lowest average (35.63), possibly indicating that minimal or inconsistent engagement is less effective than either full commitment or independent study.

This comparison highlights that active and consistent participation in online mentoring sessions significantly enhances student engagement and practical performance. The results support the idea that structured support through mentoring can improve outcomes, especially when students engage meaningfully and regularly.

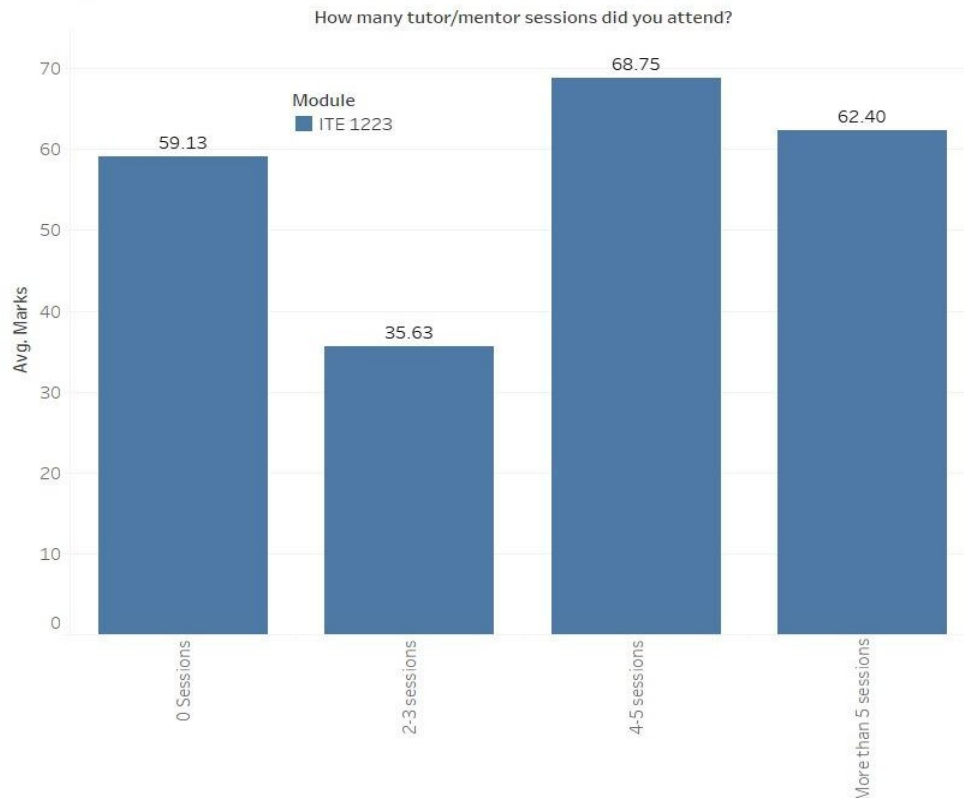


Figure 2: Average practical marks by online mentoring session attendance

4. Conclusion

This research comprehensively evaluated the impact of online mentoring sessions on student engagement within a self-paced, mentor-assisted, multimedia learning environment. The findings across all three objectives consistently highlight the positive role of structured mentoring in enhancing both academic engagement and performance.

Firstly, the analysis of login activity revealed a marked increase in student participation immediately following online mentoring sessions, particularly for the lessons directly addressed during these sessions. This indicates that online mentoring not only reactivated student interest but also provided the clarity and encouragement needed to re-engage with course content.

Secondly, insights from student feedback and target group segmentation confirmed that mentoring fostered deeper interaction with learning materials, boosted intrinsic motivation, and increased participation frequency. The real-time guidance, alongside multimedia content, created a learning environment that was more inclusive, responsive, and psychologically engaging key elements for sustained academic participation in distance learning settings.

The combination of real-time guidance and multimedia resources created a learning atmosphere that was both supportive and stimulating, ultimately contributing to heightened psychological investment in the course.

Thirdly, academic performance analysis showed that mentored students performed better in final practical assessments than those who did not attend the sessions. This improvement reflects not only better comprehension and confidence but also a stronger ability to apply knowledge effectively demonstrating deeper cognitive engagement.

Beyond academic metrics, the influence of mentoring on students' future career development is notable. By nurturing key skills such as self-regulation, problem-solving, and the ability to seek and apply feedback, mentor sessions helped students cultivate habits essential for workplace success. The approximately 5% increase in engagement further validates the influence of structured, culturally and linguistically responsive mentoring on student motivation and interaction.

In conclusion, the introduction of synchronous online mentoring into an asynchronous educational model significantly improved student engagement. The findings support the integration of structured mentor support as a sustainable strategy for enhancing student outcomes in distance and asynchronous learning environments, particularly among first-year undergraduates in diverse educational contexts.

Ethics Declaration

Ethical clearance for collection of data was obtained as per the university regulations.

AI Declaration

AI-based tools were used solely for formatting assistance and language refinement. All intellectual content, analysis, and conclusions presented in this paper are the original work of the authors.

References

- Andersen, C. L. & West, R. E. (2021). “‘We overwhelm them with hope’: How online mentors can support online learners.” *Online Learning*, 25(4), pp. 388–415.
- Edwards, C., Gregory, L. and Hardie, L. (2021) ‘Setting up a pilot peer mentoring programme in the online environment’, *Journal of Rights and Justice*, 2, pp. 7–17.
- Enwereji, P.C. and van Rooyen, A.A. (2024) ‘Examining the views of non-e-tutoring students on potential benefits and drawbacks of incorporating e-tutoring into their learning experience’, *Proceedings of the 23rd European Conference on e-Learning (ECEL)*, 23(1), pp. 85–93.
- Maré, S. & Mutezo, A. T. (2021). *The effectiveness of e-tutoring in an open and distance e-learning environment: Evidence from the University of South Africa*. *Open Learning: The Journal of Open, Distance and e-Learning*, 36(2), 164–180.
- Omar, N.D., Hassan, H. and Atan, H. (2012) ‘Student engagement in online learning: Learners’ attitude toward e-mentoring’, *Procedia – Social and Behavioral Sciences*, 67, pp. 464–475. doi:10.1016/j.sbspro.2012.11.351.
- Queiruga-Dios, M., Pérez-Araujo, Á., Romero de Ávila-Arias, C. and Queiruga-Dios, A. (2023) ‘Improvement of individual learning with mentoring programs for first-year undergraduate students’, *Frontiers in Psychology*, 14, 1046999. doi:10.3389/fpsyg.2023.1046999.
- Salgador, J.P.Z. (2018) ‘Data Analytics with Tableau: The Trend Lines Models’, *SSRN Electronic Journal*. doi:10.2139/ssrn.3282727.
- Sherman, K. and Camilli, G. (2014) ‘Evaluation of an online mentoring program’, *Teacher Education Quarterly*, 41(2), pp. 107–130.
- Spitzer, M.W.H., Gutsfeld, R., Wirzberger, M. & Moeller, K. (2021) ‘Evaluating students’ engagement with an online learning environment during and after COVID-19 related school closures: A survival analysis approach’, *Trends in Neuroscience and Education*, 25, 100168. doi:10.1016/j.tine.2021.100168.