تقييمُ إطار مجتمع الاستقصاء في التَّعليم عبر الإنترنت من وجهة نظر الطُّلاب الجامعيين في جامعة بيشة

أحمد محمد الدليل

أستاذ تكنولوجيا التعليم مساعد

كلية التربية — جامعة بيشة

المُسْتَخْلَص: فحصت هذه الدِّراسةُ فعاليةَ إطار مجتمع الاستقصاء (COI) في التَّعليم عبر الإنترنت، كما يراه الطُّلابُ الجامعيون في جامعة بيشة. وهدفت الدِّراسةُ إلى تقييم مستويات الحضور التَّعليمي، والحضور الاجتماعي، والحضور المعرفي في الدورات الدراسية عبر الإنترنت بالجامعة. من خلال تحليل تصورات الطلاب، وسعت الدِّراسةُ إلى تحديد نقاط القوة والمجالات التي تحتاج إلى تحسين في بيئة التَّعلُم الإلكتروني الحالية في الجامعة. واستخدمت الدِّراسةُ استبانةً مستندةً إلى إطار (COI) لجمع البيانات حول الحضور التَّعليمي، والحضور الاجتماعي، والحضور المعرفي. وأشارت نتائجُ الدِّراسة إلى أنَّ الطُّلاب الجامعيين في جامعة بيشة يستفيدون بشكلٍ كبيرٍ من إطار مجتمع الاستقصاء (COI) في التَّعليم المتزامن عبر الإنترنت. وأظهر الطُّلاب تصورات إيجابية تجاه إطار (COI)، مع حصول الحضور التعليمي على متوسِّط درجات عالٍ (٤,٢)، والحضور المعرفي (٤,١)، والحضور الاجتماعي (٤,٠٩). حصل بُعْد الحضور التَّعليمي على أعلى متوسِّط للدرجات؛ مما يشير إلى أن المدرسين ينجحون في إشراك الطلاب وتقديم المحتوى بشكلٍ تفاعلي. فيما يتعلق بالفروق بين الجنسين، أظهر الطلاب الذُّكور تفضيلًا أكبر للحضور التَّعليمي. ومع ذلك، لم تُلاحظ فروق ذات دلالةٍ إحصائية بين الجنسين والتَّخصُّصات الأكاديمية فيما يتعلق بالحضور المعرفي والحضور الاجتماعي.

الكلمات المُفتاحية: إطار مجتمع الاستقصاء (COI)، التَّعليم المتزامن عبر الإنترنت، الطُّلاب الجامعيون، تقييم الفعالية

Assessing COI Framework in Online Education as Perceived by Undergraduate Students at Bisha University

Ahmad Mohammad Aldaleel

Assistant Professor - College of Education, University of Bisha

Abstract: This study examined the effectiveness of the Community of Inquiry (COI) framework in online education, as perceived by undergraduate students at Bisha University. The study aimed to evaluate the levels of teaching, social, and cognitive presence in the university's online courses. By analyzing student perceptions, the study aimed to identify strengths and areas for improvement in the existing online learning environment at the university. The study utilized a survey questionnaire based on the COI framework to collect data on teaching presence, social presence, and cognitive presence. The study results indicate that undergraduate students at Bisha University derive significant benefits from the Community of Inquiry (COI) framework in synchronous online education. Students exhibited a positive perception of the COI framework, with high average scores in teaching presence (4.2), cognitive presence (4.1), and social presence (4.09). The highest average score was awarded to the teaching presence dimension, indicating that instructors effectively engage students and engagingly deliver content. As for gender-based differences, male students preferred a greater preference for teaching presence. However, no significant differences were observed based on gender and academic majors in terms of cognitive presence and social presence.

Keywords: Community of Inquiry framework (COI), synchronous online education, undergraduate students, effectiveness evaluation.

Introduction

With the rise of modern technology, many fields have undergone significant changes thanks to technological advancements and the widespread use of the internet. One of the most notable transformations is the emergence of synchronous and asynchronous online education as highly effective contemporary educational models. These approaches involve learners using innovative distance learning techniques to access top-notch educational opportunities through real-time communication with their educators as well as ubiquitous access to learning materials. Organizing virtual classrooms enables direct interaction and engagement between educators and students, regardless of geographical location (Ademola, 2023). Students may also study on their own time and access a wide range of learning material through technological education platforms (Hung et al., 2024). Saudi Arabia is one of the regions that have adopted modern technology in education to meet the requirements of Vision 2030 among which is improving and integrating modern learning approaches (Alowayyid, 2024). In addition, learning institutions in Saudi Arabia seek to meet the expectation of building an innovative knowledge-based society system in the Kingdom (Muberik, 2024).

Based on a study carried out at Najran University in 2018, it was established that while virtual education had been proven beneficial for universities, online enrolment remained low (Rajab, 2018). The factors contributing to the low enrolment included the perception that eLearning lacked a supportive environment, had reduced interactivity, and was associated with academic difficulties (Rajab, 2018). A similar study among medical students from different universities in five regions of the Kingdom of Saudi Arabia also assessed student perceptions of online learning. The research by Alghamdi et al. surmised that the utilization of both synchronous and asynchronous learning had benefits for different students' performance, with synchronous learning showing better GPA matrices compared to traditional learning (Alghamdi et al., 2024). However, the performance fluctuations were still affected by individual, technical, and environmental factors. These factors had an impact on the interaction, understanding, and performance of medical students in the online sessions (Alghamdi et al., 2024). Almohammadi (2024) substantiates the argument by reiterating that while online synchronous learning has its benefits, student readiness is one of the dynamics with limited consideration. In light of unforeseen influences such as Covid-19, political circumstances, and other factors that determine learning, the attitudes towards online learning, despite the evidence of benefits, can be demonstrated using a framework for deeper learning and improved student engagement (Almohammadi, 2024).

The studies by Rajab (2018), Alghamdi et al., (2024) and Almohammadi (2024) suggest that students In Saudi Arabian higher learning institutions may need help with particular challenges and concerns encompassing personal, technical and environmental influences. One such issue is adapting to the virtual learning environment and the perceived need for more social interaction compared to traditional classroom settings. The transition from face-to-face classes to virtual synchronous sessions can be challenging for students, as it requires them to independently manage their time and study plans, which entails self-organization and self-motivation. This transition may prove challenging for some students, highlighting the need for training in developing organizational and planning skills to improve the synchronous online learning experience (Jeong & Chung, 2023). Additionally, synchronous online education may require support for social interaction. In a conventional classroom setting, students can interact directly with their peers and teachers, allowing for communication, exchanging ideas, and exposure to differing viewpoints. However, in

virtual classrooms, students may miss out on this crucial social dynamic, which could negatively impact their sense of community and involvement in the learning experience (Majewska & Zvobgo, 2023). Students in synchronous settings may also be affected by demanding schedules and family responsibilities that limit their flexibility and access to the real time schedule in synchronous settings. These challenges are crucial in the assessment of online learning frameworks that assist students to learn effectively.

The COI framework, consequently, aids in identifying challenges and factors that affect students' attitudes towards online education. COI is a theoretical framework that offers a model to comprehend and support online learning experiences. It suggests that successful online learning experiences are dependent on three distinct yet interconnected elements: social presence, cognitive presence, and teaching presence. Teaching presence reinforces cognitive and social presence by providing an environment where the learners are comfortable engaging in and reflecting on what they learn. On the other hand, social presence upholds a sense of community, which is fundamental in collaborative and constructive learning, and cognitive presence is responsible for ensuring constructive learning activities and interactions that lead to the practical construction of knowledge. The three elements create a compelling and holistic online learning experience that enables students to connect and attain significant learning outcomes (Fayyad et al., 2022). Educational institutions can improve their services and establish synchronous online education policies that cater to student needs to promote effective distance learning. In the literature, the COI framework is a social constructivist model that underscores the significance of learning within social contexts, where learning is viewed as an active process of meaning-making by the learner (Mackinnon et al., 2020).

Literature Review

Education has undergone a significant transformation with the advent of technology and the internet, leading to the rise of synchronous online learning as an effective educational model. This approach enables real-time communication between educators and students, fostering collaborative learning through virtual classrooms that overcome geographical barriers. In Saudi Arabia, synchronous learning is particularly valued for its ability to reduce spatial constraints and provide immediate feedback. Synchronous learning enhances student-instructor interaction, which is crucial for effective learning. This real-time engagement helps in clarifying doubts instantly and maintaining student motivation (Alghamdi et al., 2024).

As Bushra (2022) points out, most studies in this field consistently yield positive results, confirming the effectiveness of synchronous online education in achieving learning objectives and enabling seamless interaction between students and instructors. This fosters collaborative activities and improves educational performance (Al-Salti & Abouawad, 2022; Amiti, 2020; Khrisat, 2023).

Historically, inclusivity in online education was difficult due to the limited capacity of traditional asynchronous models to engage diverse cultural perspectives and real-time support (McLoughlin, 2001). Asynchronous learning, while flexible, also lacks immediacy, making it difficult for students from varied cultural backgrounds and with different responsibilities to navigate unfamiliar educational conventions (Varkey et al., 2023). Additionally, asynchronous environments limit the potential to build a sense of community which is essential for learning groups that value cohesive learning. Synchronous learning, as such, addresses these inclusivity challenges by enabling real-time interaction for dynamic interaction and immediate feedback (Counselman

Carpenter et al., 2020). A comparative study by C. Li et al. (2024) illustrated the significance of current synchronous models in different settings such as urban and rural schools in China. The research determined tailored facilitating and learning behaviour among the schools allowing for effective learning. In the culturally diverse classroom, a synchronous platform allows instructors to adapt teaching methods in response to student needs. The adaptation is useful for a responsive learning environment and shared insights across diverse backgrounds. The immediacy can also counter the isolation often experienced in asynchronous settings (C. Li et al., 2024).

Compared to asynchronous learning, synchronous online education may be more suitable for the current global education setting. In a study by Northey et al. (2015), it was found that student engagement was more challenging in asynchronous settings due to a lack of time boundaries and increased exposure to distractions. However, the authors noted that for self-motivated students, engagement could still be maintained through asynchronous learning (Northey et al., 2015). Asynchronous learning often suffers from a lack of time boundaries, leading to procrastination and reduced engagement. In contrast, synchronous sessions provide structured time slots that help students manage their schedules more effectively (Stuart et al., 2022). Additionally, the presence of distractions in asynchronous environments can be mitigated by the focused nature of live sessions, which demand attention and active participation (Q. Wang & Huang, 2024).

Asynchronous online education offers a significant advantage by enabling students to learn at their own pace (Varkey et al., 2023). This flexibility empowers them to decide on study times that align with their work schedules and daily life requirements. Students can enhance their focus and engagement in learning by interacting with educational content and lesson resources at their convenience (Nieuwoudt, 2020). However, synchronous online education represents an inclusive instructional model that benefits learners across various categories. This approach accommodates a broad spectrum of learners, from university students to working professionals and individuals with diverse educational interests (Khrisat, 2023). Research and studies in this field consistently demonstrate that synchronous online education improves academic outcomes and enhances students' critical thinking, problem-solving skills, and practical communication abilities (Alotaibi, 2023; Mahmoud et al., 2022). In Saudi Arabia, it plays a crucial role in supporting English as a foreign language students by reducing geographical barriers, saving time, and enabling real-time interaction and immediate feedback from instructors (Alfares, 2024).

Synchronous learning offers real-time interaction and support, which is essential for students who benefit from immediate feedback in the learning environment. In synchronous virtual classrooms, students from different backgrounds have the opportunity to ask questions, engage in discussions, and receive instant clarification from instructors and peers (Semingson, 2020). This interaction encourages a sense of community and belonging. The immediacy in the settings could benefit students who might struggle in isolated, self-paced environments as noted in asynchronous settings. Additionally, synchronous learning accommodates various learning styles, especially for auditory and verbal learners who benefit from live discussions and real-time explanations (Counselman Carpenter et al., 2020; Shield & Gardner, 2013). Group activities are easily integrated into the synchronous classroom, allowing students to engage with diverse perspectives from the learning material. This interaction is especially valuable for students from underrepresented backgrounds, as it encourages the exchange of viewpoints and improves the inclusivity of the learning environment.

The swift shift to synchronous online learning, however, has posed challenges for students adjusting to virtual classrooms. Some students need help with the learning curve, while teachers must possess tech proficiency and practical engagement skills to ensure successful outcomes (Ashash & Ramadani, 2022). As noted by Almohammadi (2024), one of the unique factors undermined in the adoption of synchronous learning was student readiness especially with the unforeseen impact of the pandemic. Alghamdi et al. (2024) further explains that this shift occurred amid complexities already in existence such as individual, technical and cultural factors. These findings are reiterated in the study by Gpal Iyer and Chapman on the inequity in synchronous online education as evidenced by the digital divide. The most common dimensions of the digital divide include digital literacy, technology access, internet connectivity and geographical disparities (Gpal Iyer & Chapman, 2021). However, Saudi Arabia is uniquely situated in the digital divide because of cultural and religious frameworks that dominate policy and execution of technology in different sectors including education.

According to Fahadayna (2024) the attempt to democratize Saudi Arabia through the Arab Spring movement was not as successful because of deep rooted beliefs of Wahhabism. Fahadayna (2024) explains that Wahhabism mostly rejects western influences including some forms of learning and information in academia (Fahadayna, 2024). The discussion of religion and culture therefore validate the uniqueness of the digital divide with practices such as censorship of information and state-controlled feminism. In their discussion of censorship, Zintl et al. (2024) explains how this practice limits a strong digital educational culture. Not only are resources prohibited or withheld but there is also the fear of surveillance that binds constructive educational collaborations that are implemented in synchronous learning (Zintl & Houdret, 2024). While it is important to note that censorship may stem from authentic concerns about the exposure to western influences that undermine traditional values, Zintl & Houdret argues that censorship is detrimental to digital learning and possible achievement of the Vision 2030. Similarly, Bilan-Cooper (2024) articulates state-sponsored feminism, where initiatives to promote the empowerment of women in digital scholarly spaces are controlled within the interests of Saudi Arabia as opposed to broader issues of gender inequality in education (Bilan-Cooper, 2024). To understand this perspective of the Saudi Arabian digital divide, the COI framework is applied in explaining the online learning experience.

The rapid shift to synchronous online learning at Bisha University, expedited by technological advancements and global events such as COVID-19, has emphasized the need to evaluate and improve the quality of the online learning environment. Bisha University is among the institutions that have the mandatory requirement to include blended learning. Most online students are part-time, and the eLearning platform has not been fully exploited. The enforcement of the requirement reflects the discussion by Almohammadi (2024) on the readiness of students to adopt a synchronous and asynchronous learning culture. In addition, the lack of full utilization of the eLearning platform could be from the University's implementation structure or some of the constraints of censorship and state-controlled digital culture.

Through the MEDAD Learning and Training Management platform, the Community of Inquiry (COI) framework is widely adopted at Bisha University, emphasizing the interconnected roles of teaching presence, cognitive presence, and social presence. MEDAD's eLearning system, virtual classes, and mobile learning interfaces for Android and iOS enable students at Bisha University to interact and collaborate across different settings, hence the social presence. In addition, the Learning Objects

Repository (LOR) and the personalized ePortfolio system are localized according to cultural and contextual needs, hence aligning with cognitive engagement, ensuring that the content and interactions are relevant to Bisha University's student body. There is also adequate teaching presence from the virtual classes, the reports, and the performance panel system. However, this platform is still new, and there is particularly little insight into how Bisha University students perceive its implementation and effectiveness within the institution's synchronous e-learning environment.

Studies conducted by Chang et al. (2023) and Fiock (2020) highlight the relevance of the COI framework in promoting active learning and fostering student participation within educational contexts (Chang et al., 2023; Fiock, 2020). Chang et al.'s (2023) findings suggest incorporating the COI framework into online education can enhance students' learning experiences and encourage learner interaction. In blended learning environments, students exhibit higher levels of interaction and participation in lessons and educational activities than those who exclusively learn through the Internet. Similarly, Fiock's research emphasizes the importance of utilizing COI dimensions to design effective online learning environments. Implementing COI can positively impact the quality of student learning, increase student engagement, and motivate learners within digital learning environments. Therefore, integrating the COI framework into online and blended learning environments can lead to better learning outcomes and higher student participation and engagement levels.

The current study adds to the existing knowledge base by closely examining the COI framework in synchronous online education via the Internet. This aligns with previous research efforts that have also explored COI. However, the study distinguishes itself by focusing specifically on measuring undergraduate students' attitudes toward synchronous online education at Bisha University. Because of the uniqueness of the digital divide in Saudi Arabia, the COI framework may present differently. As discussed by Zintl and Houdret (2024) and Bilan-Cooper (2024), digital censorship and state-controlled narratives about aspects of culture such as gender have an exceptional impact on online learning in the region.   This angle has yet to receive much attention in previous literature, emphasizing the importance and necessity of this research. By exploring this unexplored area, the study seeks to provide valuable insights for educators and policymakers on the unique dynamics of COI in the context of undergraduate learners. The study employs a descriptive approach and questionnaires as data collection tools, like most previous investigations on this topic.

None of the research studies explored above focuses sufficiently on academic specializations and particular significant demographic variables like gender differences, which could significantly influence the difference in perception and efficiency of COI framework in online learning. Therefore, this research study aims to address these gaps by conducting a detailed evaluation of the implementation and efficiency of the COI framework in enhancing synchronous online education for undergraduate students at Bisha University based on the students' perspectives. Specifically, the study will explore how students perceive teaching and cognitive and social presence in their synchronous online learning practices and whether the perspectives vary depending on gender and academic specializations. The study seeks to answer two key questions. The first question examines to what extent the COI framework improves synchronous online education from the perspective of undergraduate students at Bisha University. The second question explores whether there are any significant differences, at a 0.05 level, in how students evaluate COI dimensions related to gender and academic specialization. By addressing these

questions, this study provides valuable insights into the use of the COI framework in synchronous online education, identifies potential areas for improvement to enhance students' learning experiences, and provides targeted recommendations on how to improve the online learning experiences that contribute to enhanced student engagement and learning outcomes.

This study has significant implications in multiple crucial areas. Firstly, it can improve the quality of online education at Bisha University by utilizing the COI framework, a fundamental tool for enhancing synchronous online teaching practices within digital learning environments. Secondly, the study's findings can enrich scholarly literature related to online education by providing clear insights into best practices and policies applicable to the field. Thirdly, the study encourages faculty engagement by urging faculty members at Bisha University to incorporate the COI framework into synchronous online teaching, ultimately enhancing students' learning experiences and making their overall online education journey more effective and efficient. Lastly, the study can guide educational policy by offering insights into leveraging COI dimensions within digital learning environments.

Methodology

Sample

Bisha University, located in the southern region of the Kingdom of Saudi Arabia, is recognized for its strong ICT and e-learning infrastructure. It provides comprehensive technological resources, including reliable network connectivity, access to computers, and dedicated technical support for both students and faculty. The research community for this study consisted of undergraduate students enrolled in the Online Education Applications course at Bisha University during the trimester of the academic year 2022-2023.

To investigate undergraduate students' attitudes toward synchronous online education, a sample of 266 students was selected from a total population of 500 enrolled students. The sampling method employed was cluster random sampling, ensuring that various academic specializations within the course were proportionally represented. This method involved dividing the student population into clusters based on their academic specializations and randomly selecting participants from these clusters. This approach enhanced the representativeness of the sample by covering a diverse range of academic backgrounds, ensuring that findings could be generalized to the broader student population.

Figure 1 illustrates the distribution of participants by gender. Among the 266 participants, 88% (234 students) were female, while 12% (32 students) were male. This gender distribution reflects the enrollment pattern commonly observed in the selected course, adding contextual relevance to the study's findings.

Figure 1

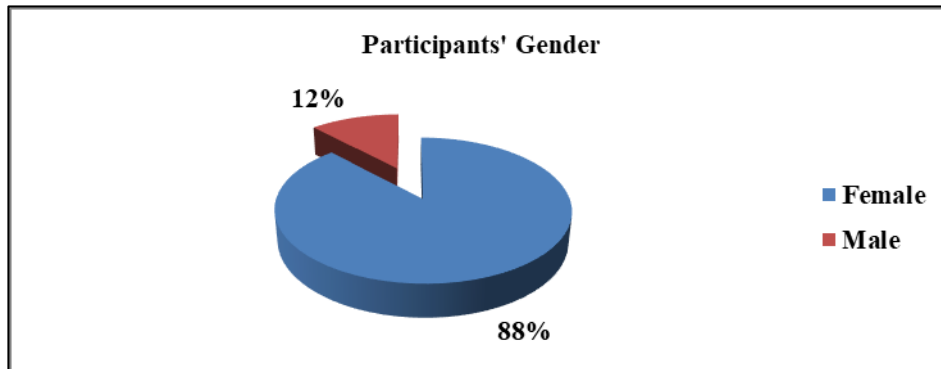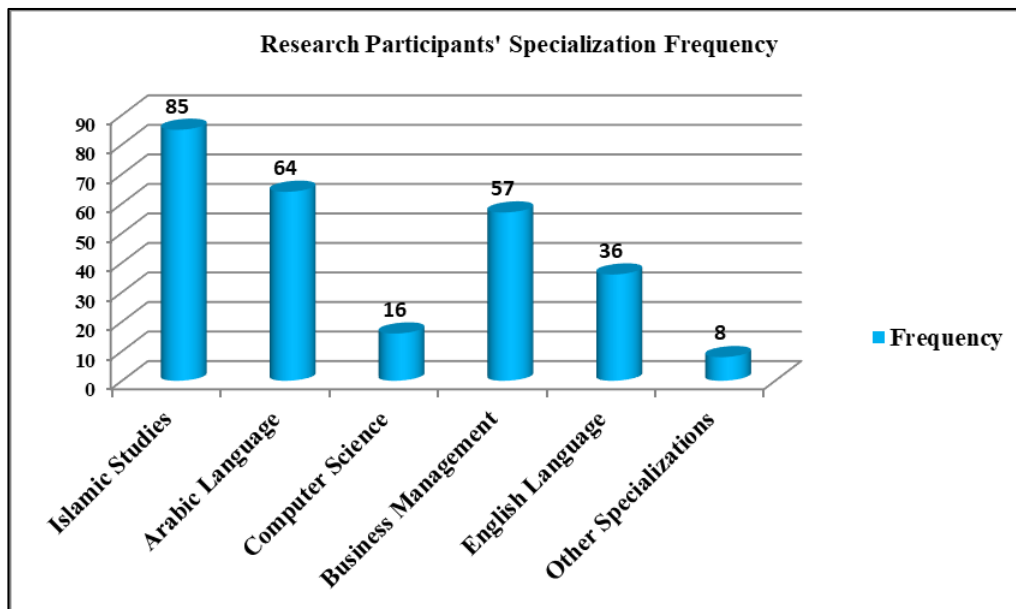*Gender of Study Participants*

Figure 2

Research Participants' Specialization

As shown in Figure 2, the academic specialization distribution within the sample highlights the diversity of participants. Islamic Studies emerged as the most represented discipline, comprising 32.0% (85 students) of the sample. This was followed by Arabic Language at 24.1% (64 students), Business Management at 21.4% (57 students), and English Language at 13.5% (36 students). Computer Science accounted for 6.0% (16 students), while 3.0% (8 students) pursued other specializations. These proportions indicate a well-rounded representation of major academic fields, supporting the study's goal of obtaining a comprehensive understanding of student attitudes toward synchronous online education.

By employing the Community of Inquiry (COI) framework, this research builds on previous investigations by analyzing how students from various academic backgrounds perceive synchronous online education at Bisha University. The diverse sample composition ensures that the findings provide meaningful insights into the broader research population's experiences and attitudes.

Study Tool

The researcher utilized a survey based on the COI framework developed initially by Arbaugh et al. (2008) to achieve the study's goals. The survey was adapted to fit the specific context of this study and included three dimensions: teaching presence (13 items), social presence (6 items), and cognitive presence (6 items). To determine the appropriate cell length for the five-point Likert scale used in the study, the range was calculated (5-1=4) and divided by the number of scale cells, resulting in a correct cell length of 0.80. This value was then added to the lowest value on the scale (corresponding to a score of 1) to establish the upper limit for this cell length. As a result, the cell lengths were determined as presents by Table 1.

Table 1

Likert Scale (Five-Point)

Scale Number	Range	Response
1	1.00-1.80	Strongly Disagree
2	1.81-2.60	Disagree
3	2.61-3.40	Neutral
4	3.41-4.20	Agree
5	4.21-5.00	Strongly Agree

As per Attia (2016) definition, ensuring the validity of a research instrument involves verifying that it is appropriate for measuring the intended phenomenon or trait. In this study, the utilized face validity and internal consistency reliability. Expert validation was used through a panel of experts and specialists in the relevant field to assess the appropriateness of the items in terms of their alignment with the intended construct, clarity, linguistic accuracy, item sequence, and arrangement. The final questionnaire version was based on adjustments made after receiving feedback from the experts. Additionally, internal consistency reliability was assessed by calculating the Pearson correlation coefficient between each item's score and the total score of its corresponding dimension. The strong positive correlations (ranging from 0.936 to 0.949) confirmed the coherence of the dimensions within the instrument.

According to the findings presented in Table 2, all items displayed positive and statistically significant correlation coefficients with their respective dimensions at a level of 0.01. Additionally, the correlation coefficients between each dimension and the overall research instrument score ranged from 0.936 to 0.949, indicating statistically significant relationships at the same significance level. These results provide further evidence of the instrument's reliability and the consistency of its dimensions.

Table 2

Pearson Correlation Coefficients for Expressions with the Overall Degree of the Dimensions

Expression Number	Correlation Coefficient with Dimension 1	Correlation Coefficient with Dimension 2	Correlation Coefficient with Dimension 3
1	0.813*	0.887*	0.887*
2	0.803*	0.898*	0.801*
3	0.789*	0.917*	0.810*
4	0.797*	0.881*	0.914*

Expression Number	Correlation Coefficient with Dimension 1	Correlation Coefficient with Dimension 2	Correlation Coefficient with Dimension 3
5	0.752*	0.848*	0.852*
6	0.769*	0.859*	0.884*
7	0.810*		
8	0.862*		
9	0.815*		
10	0.773*		
11	0.871*		
12	0.872*		
13	0.848*		
Overall	0.949*	0.938*	0.936*

* Indicates statistical significance at the 0.01 level or lower.

Assessing the reliability of a research instrument is crucial to ensure the consistency and stability of the data obtained. In this study, the researcher used Cronbach's Alpha (α) statistical measure to evaluate the questionnaire's reliability. The results, as shown in Table 3, indicate a high-reliability coefficient of 0.975, surpassing the acceptable threshold of 0.70. This analysis confirms that the questionnaire can be confidently utilized for field application in the study, as it demonstrates consistent data collection under similar conditions.

Table 3

Alpha Cronbach Coefficients for Measuring the Stability of the Research Tool

| Dimension	Scale Factors	Number of Items	Dimension Reliability
1	Teaching Presence	13	0.957
2	Social Presence	6	0.943
3	Cognitive Presence	6	0.926
Overall Reliability		25	0.975

Results and Discussion

The study aimed to assess the effectiveness of the COI model in synchronous e-learning for undergraduates at Bisha University by calculating the mean and standard deviations for the model's three dimensions: teaching, social, and cognitive presence. The findings, illustrated in Figure 3, indicate that students perceive the COI framework as highly effective, with an overall mean score of 4.13 and a standard deviation of 0.46. Notably, the structured course design, timely feedback from instructors, and interactive learning activities emerged as key contributors to the framework's perceived effectiveness, fostering both engagement and knowledge retention. Teaching presence received the highest average score of 4.2, followed by cognitive presence at 4.1 and social presence at 4.09.

These findings can be attributed to the increased reliance on technology for learning during the COVID-19 pandemic. Using online applications to manage the learning environment and professional development efforts in both technical and educational aspects likely contributed to the positive results. These findings are consistent with previous studies by (Al-Asar, 2021; Al-Salti & Abouawad, 2022), highlighting the

positive impact of the COI framework's three dimensions. For further details, the mean and standard deviations were calculated for each dimension of presence: teaching presence, social presence, and cognitive presence.

Figure 3

The Reality of the Effectiveness of Elements (Post-Teaching Presence) within the Inquiry-Based Learning Framework According to Students' Attitudes Toward Synchronous Online Education at Bisha University
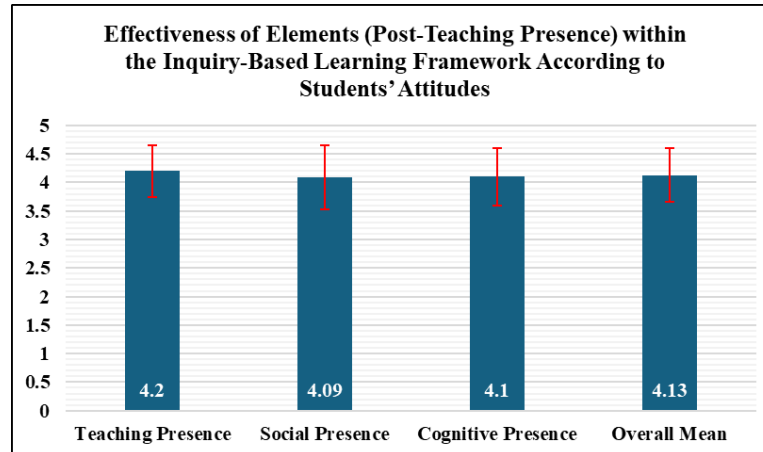
The Teaching Presence Dimension

In numerous Middle Eastern cultures, including that of Saudi Arabia, there exists a deeply ingrained reverence for the authority of educators. This cultural reverence for educators may also lead to heightened expectations for instructors to take a central, authoritative role in synchronous e-learning environments. In Saudi Arabia, where hierarchical structures often influence interpersonal dynamics, students may equate strong teaching presence with the instructor's ability to provide clear, structured guidance. Furthermore, cultural norms around respect for authority figures could lead to students being more hesitant to question or critique teaching methods, which may partially explain the high ratings for teaching presence.

According to the data presented in Table 4, the sixth item in the first dimension of the study, which focuses on the use of diverse teaching methods by instructors, received the highest approval ratings. 30% of participants strongly agreed with this item, while 67% agreed. Overall, the consensus was strongly favorable, with an average rating of 4.3. On the other hand, the fifth item in the same dimension, which pertained to instructors providing necessary guidance and technical support to students, obtained a lower average rating of 4.1. The overall opinion for this item was "agreed," according to the responses of participating students. Furthermore, the overall average for this dimension was 4.2, based on the feedback from students who participated in the study.

These results indicate that the teaching methods used in the synchronous online learning environment at Bisha University meet students' expectations and positively contribute to achieving learning objectives. These findings can guide future decisions in designing instructor training programs, emphasizing the importance of diverse teaching methods and technical support to meet students' expectations. For instance, integrating workshops focused on interactive teaching techniques or providing instructors with tools for real-time student feedback can further enhance engagement. Additionally, the reliance on varied teaching approaches can inform the development of standardized

guidelines for synchronous e-learning, ensuring that educators effectively balance content delivery with student interaction.

Using varied and engaging teaching techniques effectively facilitates student communication, enhances understanding, and motivates them to learn. These findings are consistent with previous studies conducted by Wang and Zhang (2023) as well as Fiock (2020). Additionally, (Ibrahim, 2021) research confirms that technical support for student issues enhances learning effectiveness in the synchronous online educational context. Students who receive academic support during synchronous online learning sessions perform better, leading to improved comprehension of educational content and increased participation in the learning process.

Table 4

Teaching Presence Assessment in Synchronous E-Learning at Bisha University as Perceived by Students

#	Teaching Presence Aspect	Mean Score	Rank	Standard Deviation	Strongly Agree (%)	Agree (%)
1	Course instructor delivers content in an engaging manner to retain students' attention and motivate learning.	4.1	10	0.591	23	71
2	The course instructor provides clear information about the expected learning objectives for the content.	4.2	2	0.530	25	70
3	Course instructor presents clear instructions on how to participate in learning activities.	4.2	3	0.523	25	71
4	Course instructor sets clear deadlines for submitting learning activities.	4.2	4	0.533	25	70
5	Course instructor offers necessary technical support and guidance to address students' technical issues.	4.1	13	0.626	19	71
6	Course instructor utilizes diverse teaching aids such as images, charts, and presentation slides to explain content.	4.3	1	0.545	30	67
7	Course instructor employs varied teaching methods to enhance students' understanding and comprehension of the content.	4.2	8	0.556	23	72
8	Course instructor provides practical examples and applications of concepts covered in the content.	4.2	5	0.540	24	71
9	Course instructor offers the necessary guidance to support the learning process.	4.2	6	0.540	24	72
10	Course instructor provides constructive feedback on student work.	4.1	12	0.591	19	74
11	Course instructor uses diverse assessment methods.	4.2	9	0.550	23	71

#	Teaching Presence Aspect	Mean Score	Rank	Standard Deviation	Strongly Agree (%)	Agree (%)
12	Course instructor genuinely shows interest in communicating and interacting with students.	4.1	11	0.646	24	69
13	Course instructor supports positive and effective communication among students.	4.2	7	0.554	25	70
	Overall Mean	4.2	-	0.458	24	71

The Social Presence Dimension

According to the data presented in Table 5, the third statement in the second dimension received the highest approval ratings from study participants. Expressly, 23% strongly agreed, and 71% agreed that online discussions supported social interaction among students, resulting in an overall average rating of 4.12. In contrast, the fourth statement in the same dimension received a lower average rating of 4.08, with a consensus of "agreed" among participating students. The feedback suggests that online discussions are critical in supporting social interaction among students, while online course activities contribute to developing teamwork skills. These findings are consistent with previous studies conducted by Ibrahim (2021) and Cho et al. (2022), which emphasized the importance of social presence in enhancing the e-learning experience and fostering interactive social relationships. Likewise, research by Weidlich and Bastiaens (2017) confirms that social presence positively influences students' satisfaction with e-learning. However, the results diverge from the findings of Turgut and Aktı Aslan (2021), who reported no significant impact of social presence on synchronous e-learning among students. Overall, establishing meaningful social relationships and adhering to discussion guidelines are crucial in achieving student satisfaction with the e-learning experience.

However, cultural factors in Saudi Arabia, such as gender segregation in educational institutions and societal expectations regarding communication styles, may influence the effectiveness of social presence. For example, mixed-gender virtual classrooms could pose challenges for interaction if students feel constrained by traditional norms. Addressing these cultural nuances, such as incorporating culturally appropriate discussion prompts or gender-sensitive facilitation techniques, could further enhance social engagement.

Table 5

Social Presence Assessment in Synchronous E-Learning at Bisha University as Perceived by Students

#	Social Presence	Average	Rank	Standard Deviation	Strongly Agree %	Agree %
1	Designed a secure learning environment to support active student participation	4.11	2	0.632	21	71
2	Online course activities contributed to forming positive impressions about the course	4.08	5	0.624	19	74
3	Online discussions supported social interaction among students	4.12	1	0.641	23	71
4	Online course activities contributed to developing my teamwork skills	4.06	6	0.670	20	70

#	Social Presence	Average	Rank	Standard Deviation	Strongly Agree %	Agree %
5	Diverse communication methods among students via email and virtual meetings	4.08	4	0.633	20	72
6	Course activities encouraged students to share personal experiences and opinions during learning activities	4.09	3	0.635	20	73
	Total (Second Dimension)	4.09	-	0.564	20	72

The Cognitive Presence Dimension

According to the data presented in Table 6, the highest approval ratings were given to the sixth statement in the third dimension, which stated that the scientific content was presented realistically and supported knowledge application in work and life contexts. Of the respondents, 21% strongly agreed with this statement, while 73% agreed. Overall, the consensus was strongly favorable, with an average rating of 4.13 among study participants. On the other hand, the second statement in the same dimension, which focused on enrichment resources for the course, received a lower average rating of 4.05. The overall opinion for this statement was "agreed," according to the responses of participating students. Additionally, the overall average for this dimension was 4.1, based on the feedback from students who participated in the study.

Table 6

Cognitive Presence Assessment in Synchronous E-Learning at Bisha University as Perceived by Students

#	Cognitive Presence	Average	Rank	Standard Deviation	Strongly Agree %	Agree %
1	Application activities in the course facilitated knowledge transfer	4.083	5	0.529	17	76
2	Enrichment resources for the course enhanced my learning experience	4.053	6	0.618	18	73
3	Course activities increased collaborative learning opportunities among students	4.094	4	0.646	21	71
4	Electronic course activities helped me apply higher-order thinking skills such as analysis, synthesis, and evaluation	4.113	2	0.578	20	73
5	Scientific content in the course was logically sequenced for effective learning	4.098	3	0.568	19	74
6	The scientific content was presented realistically, supporting knowledge application in work and life contexts	4.128	1	0.594	21	73
	Total (Third Dimension)	4.095	-	0.504	19	73

According to the researcher, incorporating practical application activities, enrichment resources, collaborative learning, electronic activities, logical content sequencing, and realistic content presentation can significantly improve the synchronous e-learning experience for students. As a result, adopting these elements in synchronous e-learning at Bisha University could enhance student learning and maximize the benefits of this

type of education. These findings suggest practical implications for curriculum developers. For example, incorporating case studies or problem-based learning activities that reflect real-world challenges can prepare students for work-life applications. Additionally, integrating cognitive presence strategies, such as the use of the MEDAD Learning Objects Repository, into broader e-learning policies could ensure consistent access to enrichment resources and foster critical thinking across disciplines.

These findings are consistent with prior research conducted (Al-Salti & Abouawad, 2022; Armah et al., 2023; Sundgren et al., 2023; Wertz, 2022) that explored the impact of the cognitive dimension in synchronous e-learning. The incorporation of problem-based learning, case studies, and discussion prompts into the educational framework significantly enhances cognitive engagement by challenging students to analyse and apply knowledge in real-world contexts (Misenor, 2024). Unlike surface-level tasks that focus solely on factual recall, these methods encourage students to reflect deeply on the material. Case studies further enrich this experience by presenting real-life scenarios that require students to consider multiple perspectives and make informed decisions from the consideration (C.-J. Li et al., 2024; Misenor, 2024). This approach aligns with the goals of cognitive presence which emphasizes the importance of dialogue and reflection in constructing meaning. The MEDAD's Learning Objects Repository (LOR) at Bisha University and personalized ePortfolio systems complement these strategies by providing access to diverse learning materials and facilitating both self-directed and collaborative learning.

Gender and Specialization Effects on Synchronous E-Learning Assessment

The study utilized the one-way analysis of variance (ANOVA) to analyze gender-based differences in students' assessment of synchronous e-learning dimensions at Bisha University. The purpose was to determine if statistically significant effects existed at the 0.05 significance level regarding community dimensions and students' evaluations of synchronous e-learning, considering their gender and specialization. The outcomes of the investigation are presented in Table 7.

Table 7

Results of the ANOVA for Differences in Students' Orientations Toward Synchronous E-Learning at Bisha University, Based on Gender

Dimension	Variance Source	Sum of Squares	Freedom Degrees	Mean Squares	F-Value	Statistical Significance	Comment
Teaching Presence	Between Groups	0.88	1	0.88	4.24	0.04	Significant
	Within Groups	54.793	264	0.208			
	Total	55.673	265				
Social Presence	Between Groups	0.185	1	0.185	0.58	0.447	Not significant
	Within Groups	84.039	264	0.318			
	Total	84.223	265				

Dimension	Variance Source	Sum of Squares	Freedom Degrees	Mean Squares	F-Value	Statistical Significance	Comment
Cognitive Presence	Between Groups	0.247	1	0.247	0.972	0.325	Not significant
	Within Groups	67.177	264	0.254			
	Total	67.424	265				
Overall Total	Between Groups	0.505	1	0.505	2.331	0.128	Not significant
	Within Groups	57.148	264	0.216			
	Total	57.653	265				

Based on the F-Value for teaching presence at 4.24, with a p-value of 0.04, there was a statistically significant difference between the groups. The findings suggest that male and female students perceive teaching presence differently, with male students possibly rating it higher. These gender-based differences could stem from cultural and social expectations, where male students may feel more confident expressing their opinions or rating teaching presence higher due to traditional societal norms around gender roles. Additionally, female students may prioritize different aspects of the learning experience, such as collaboration or communication, which align more closely with social and cognitive presence dimensions. Understanding these dynamics is crucial for tailoring e-learning strategies to address diverse needs and expectations effectively.

The results certify further investigation to understand the factors contributing to differences in the viewpoints in teaching presence. The finding aligns with the paper's suggestion of potential gender-based differences from cultural and state-controlled influences. In addition, Jang et al. (2016) argues that the gender of the child may affect how they perceive teaching presence based on social expectations and gender responses to authority within the culture. There was no significant difference between the groups in the measurement of social presence as well as cognitive presence. In a study by Wong and Chapman, (2023) it was reported that both male and female students report similar satisfaction with peer interactions in online learning contexts, indicating that social presence is experienced similarly across genders.

Table 8

Results of the ANOVA for Differences in Students' Orientations Toward Synchronous E-Learning at Bisha University, Based on Specialization

Dimension	Variance Source	Sum of Squares	Freedom Degrees	Mean Squares	F-Value	Statistical Significance	Comment
Teaching Presence	Between Groups	0.934	5	0.187	0.887	0.49	Not Significant
	Within Groups	54.739	260	0.211			
	Total	55.673	265				
Social Presence	Between Groups	1.329	5	0.266	0.834	0.527	

Dimension	Variance Source	Sum of Squares	Freedom Degrees	Mean Squares	F-Value	Statistical Significance	Comment
	Within Groups	82.894	260	0.319			Not significant
	Total	84.223	265				
Cognitive Presence	Between Groups	0.599	5	0.12	0.466	0.802	Not significant
	Within Groups	66.826	260	0.257			
	Total	67.424	265				
Overall Total	Between Groups	0.625	5	0.125	0.57	0.723	Not significant
	Within Groups	57.028	260	0.219			
	Total	57.653	265				

The study utilized an ANOVA to investigate differences in students' evaluation of synchronous e-learning dimensions among specializations at Bisha University. Table 8 displays the results, indicating no significant differences at the 0.05 level across all sizes and the questionnaire's overall total in favor of specialization in teaching, cognitive, and social dimensions. These findings contrast with Abdel Jawad and Shalash (2020) study, which found statistically significant effects on academic specializations at Al-Quds Open University, where community service specialization outperformed business administration and financial accounting specializations. Furthermore, Ibrahim, (2021) study showed significant differences in critical thinking skill development among experimental groups, with Group 2 performing better than Group 1 and the control group. Additionally, d'Alessio et al. (2019) research emphasized the influence of inquiry community-based teaching on metacognitive skills. Similarly, (Al-Salti & Abouawad, 2022) study demonstrated significant effects of college type on social, cognitive, teaching, and affective dimensions, favoring humanities colleges. Finally, Al-Ali et al. (2024) study found that students in the College of Business at Al-Ahliyya Amman University had greater responsiveness towards digital citizenship values than digital thinking skills. Therefore, several factors, including the standardized e-learning methods at Bisha University and the generalization of techniques and regulations across all specializations, may account for the current study's results, leading to similar student responses regarding dimensions related to synchronous e-learning.

According to the table above, the ANOVA results for teaching, social, and cognitive presence reveal no significant difference based on specialization variables. Additionally, the overall total ANOVA results also illustrate no significant differences in students' orientations toward synchronous e-learning at Bisha University, and this supports the consistency in the students' perspectives across the three dimensions of the COI framework. The results align with various research findings, for instance (Wilson & Berge, 2023), which found that teaching presence perceptions are consistent across multiple academic disciplines. Thus, the synchronous online learning facilitation and instructional design at Bisha University are equally efficient across different specializations. Additionally, research findings by (Whiteside et al., 2023) underscore that social presence is a universal aspect of online learning that fosters a sense of

belonging and community in the online classroom in all academic disciplines. Therefore, this implies that all learners across all the specializations at Bisha University are uniformly supported and connected in their synchronous online learning experiences. Research findings by (Zgheib et al., 2023) also corroborate that cognitive presence is a fundamental dimension of the COI framework that involves the construction of knowledge and critical thinking. The cognitive dimension's fundamental presence implies that all the reflective and intellectual engagement offered to Bisha University students in synchronous e-learning is equally effective for all learners.

According to Aelterman et al. (2019) and Jang et al. (2016) social aspects such as the gender of the student or the teacher may affect their learning adaptations. While Jang et al. (2016) determine that male students prefer direct learning approaches and are more situated to the teaching presence of facilitator, Aelterman et al. (2019) finds it more complex, arguing that how the student was raised, the community and personal experience may affect their learning adaption to synchronous e-learning. Jang et al. (2016) however argue that male and female students often learn differently. In particular, the authors contend that male students usually like clear, structured teaching, which may make them rate the teaching presence in online classes higher. This might build the thought that having a teacher who guides them is really important for their learning. In addition, an important aspect is the experience of the student with online classes. If the male students have had good experiences with online classes before, they might be more positive about how teachers interact with them now. However, the findings surmised that both male and female students seemed to work together and understand the material similarly especially in inclusive synchronous learning. This could explain the absence of significant differences in how they feel about social and cognitive aspects of learning. In addition, Aelterman et al. (2019) argues that cultural expectations can affect how boys express their opinions about teaching, possibly making them more confident in giving higher ratings. Nevertheless, it is important to consider that the study did include a uniquely diverse group of students. Most of the participants were female and a larger number of male students may have improved the findings on male students rating higher teaching presence. Based on the perspective by Aelterman et al. (2019), this might have affected the findings where important differences in how male and female students learn and their collective experiences.

Conclusion

The study explored the effectiveness of the COI Framework in synchronous education for undergraduate students at Bisha University. The study aimed to assess students' perceptions of the framework's effectiveness, and the results were quite positive. Teaching presence received an impressive average score of 4.2, while cognitive presence received a satisfactory score of 4.1. Social presence received a moderate score of 4.09, indicating a moderate level of social interaction. These results highlight the appropriateness of the framework for synchronous e-learning within this particular context.

These findings corroborate earlier research emphasizing the COI framework's relevance in enhancing synchronous e-learning environments. However, this study contributes a unique perspective by contextualizing these dimensions within Saudi Arabia's cultural framework, where instructor authority and structured teaching methods strongly influence student satisfaction. This highlights the need for localized

e-learning strategies that consider cultural dynamics while adhering to international educational standards.

In the wake of the COVID-19 pandemic, professional training and development have increasingly relied on technology in education. To ensure that teaching methods align with student expectations, educators have used online discussions to help foster social interaction among students. Electronic course activities have been implemented to promote collaborative skills, and scientific content has been presented practically and realistically to support application in both work and life domains. A holistic approach, which includes application-based activities, enrichment resources, cooperative learning, and well-organized scientific content, has been adopted to enhance the synchronous e-learning experience for students. These efforts have proven successful, as the COI framework is practical in synchronous education for undergraduate students at Bisha University.

On the other hand, For the Influence of Gender and Major on Student Evaluations in Synchronous E-Learning, this study found that male students rated higher in the teaching presence dimension of the COI framework in synchronous e-learning. This difference was statistically significant. However, no significant differences were observed for social presence, cognitive presence, or overall questionnaire scores. These findings suggest that gender-based learning preferences and prior online learning experiences play a role

The construct of social presence, which encompasses interaction among peers, garnered a marginally inferior evaluation in comparison to teaching presence, suggesting that although students appreciate engagement with their peers, the prevailing cultural inclination towards teacher authority may diminish the prominence of peer interactions. The research underscores the significance of social presence in augmenting the e-learning experience; however, it does not explicitly associate this phenomenon with cultural attitudes prevalent in Saudi Arabia.

Interestingly, the study found no significant differences in student evaluations related to major. This was held the same across all COI dimensions and the overall questionnaire score. These results differ from previous studies that reported a significant impact on student evaluations of e-learning. In summary, while the absence of major-related differences in student evaluations is intriguing, it underscores the need for further research and critical examination of how institutions utilize these evaluations.

While the findings are specific to Bisha University, the demonstrated effectiveness of the COI framework offers insights applicable to other higher education institutions, especially those in regions with similar cultural and technological contexts. For example, universities aiming to transition to synchronous e-learning can adopt the framework by emphasizing structured teaching presence, fostering meaningful peer interactions, and tailoring course content to local cultural values.

Limitations

This study was conducted at Bisha University, a private higher education institution located in Asir Province. The findings are based solely on the experiences of students in the University. As such, the research may not adequately reflect the perspectives of students attending public institutions where educational resources, social dynamics, and community engagement may differ. The sample for this study predominantly included female students, with a majority specializing in Islamic and Arabic Studies. This

demographic concentration may undermine the experiences of non-traditional students. While the findings provide valuable insights into the experiences of the selected student population at, they may not be applicable to all students within the larger Saudi Arabian academic community.

The study utilizes the Community of Inquiry (COI) framework to examine online education but does not thoroughly explore how Saudi Arabian cultural norms shape students' perceptions, particularly regarding social presence. The study recognizes the broader Saudi cultural context but does not delve into how cultural norms specifically affect students' online learning experiences or expectations.

Recommendations

The study proposes several suggestions to improve the efficacy of online learning. These measures include classifying faculty members into three dimensions of the learning community, encouraging their use of these dimensions, diversifying teaching methods, fostering social interaction, and prioritizing cognitive development through activities focusing on primary course skills. The study recommends institutional policy reforms that focus on contemporary pedagogical online strategies with the consideration of cultural norms to support a teaching presence that accommodates education and local standards, encourages authentic expression and improves the learning environment. As Bisha University already has a strong technological infrastructure and has a policy on the mandatory use of eLearning, this study proposes localized education within the school promoting the use of the online platform. With the consideration of cultural norms, it is important that the digital content abides to the national education standards and that the virtual spaces are safe and moderated. Moreover, the study recommends that students employ case studies and real-world problem-solving activities to engage in thought-provoking content that fosters in-depth understanding and critical thinking to improve cognitive presence. The learners are also encouraged to integrate structured reflection practices, such as journaling and engaging in discussion prompts that motivate them to incorporate new knowledge and reflect on their learning experiences, improving cognitive presence. Bisha University can implement some of the ePortfolio tools to encourage reflection and critical thinking. This is useful for improved digital literacy and discovery of learning opportunities that encourage online education. Ultimately, the study suggests future research in public universities, exploring the effectiveness of COI and other distance learning methods, identifying optimal approaches for promoting attendance, cognitive presence, and social presence, and determining the core competencies necessary for faculty members to successfully apply the COI's survey community framework in simultaneous e-learning. These recommendations and research areas offer the potential to significantly enhance the quality of online education and boost the effectiveness of simultaneous e-learning.

To further enhance the synchronous e-learning experience, it is recommended that Bisha University upgrade its 'Midad' platform by incorporating interactive tools such as virtual breakout rooms, collaborative whiteboards, and gamified learning activities. These features can enhance social presence and foster a sense of community among students, addressing the moderately rated social presence dimension. Additionally, the platform could integrate real-time analytics to provide instructors with insights into student engagement, enabling more tailored support and interventions.

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