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EXPLORING AND DEVELOPING A TEACHING PRESENCE INSTRUMENT FOR UNDERGRADUATE STUDENTS IN ENTREPRENEURSHIP BLENDED LEARNING

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ABSTRACT

Blended learning has become a dominant approach in higher education. However, sustaining student engagement in entrepreneurship courses remains challenging due to reduced interaction and unclear instructional support. This study addresses the lack of validated instruments for measuring teaching presence in entrepreneurship blended learning environments. The objective was to construct and validate a teaching presence instrument grounded in the Community of Inquiry framework, tailored for undergraduate entrepreneurship students. A quantitative design was employed, involving item adaptation, expert validation for face and content validity. A pilot study with 130 randomly selected students from a social sciences and humanities as well as science and technology programs enrolled in entrepreneurship course. Exploratory Factor Analysis confirmed the dimensionality and reliability of the instrument, with a Kaiser Meyer Olkin value of 0.92 and a significant Bartlett Test of Sphericity ($\chi^2 = 2362.63$, df = 78, $p < .001$). Two components were retained, explaining 83 percent of the total variance in students' perceptions of teaching presence. The retained items demonstrated strong factor loadings and excellent internal consistency, with a Cronbach alpha of 0.96. The findings indicate that the instrument is valid and reliable for assessing teaching presence in entrepreneurship blended learning. A limitation of this study is its focus on a single course and institution, which may restrict generalizability. Future research should apply the instrument to diverse academic contexts, employ confirmatory factor analysis, and explore relationships between teaching presence and outcomes such as engagement and entrepreneurial intention. This validated tool offers educators and researchers a practical means to enhance instructional design and improve blended learning effectiveness in entrepreneurship education.

Keywords: Community of Inquiry, Entrepreneurship Blended Learning, Exploratory Factor Analysis, Teaching Presence, Reliability.

INTRODUCTION

Blended learning is widely adopted in higher education and is increasingly used in entrepreneurship courses that demand active learning, collaboration, and problem solving. However, students in blended settings often report reduced interaction and fluctuating guidance, and instructors face challenges in selecting and integrating digital tools effectively for entrepreneurship tasks. These issues raise the need for a strong teaching presence to structure learning, clarify expectations, and sustain meaningful interaction. Prior work documents these challenges and points to the central role of teaching presence in maintaining engagement and the quality of learning experiences in blended formats (Muhria et al., 2023; Chen et al., 2021). Within the Community of Inquiry tradition, teaching presence is commonly understood through design and organization, facilitation, and direct instruction. Empirical studies in entrepreneurship and related domains show that high quality design and instructor support are linked with students' behavioral and cognitive engagement, as well as their performance in blended environments (Mahmud et al., 2020; Wang, 2024). At the same time, recent study has emphasized that student interactions and engagement play a mediating role in entrepreneurship education performance, reinforcing the practical value of measuring and intentionally designing teaching presence in blended settings (Nasirun & Shahidan, 2024).

Many available instruments were developed for general online learning and may not reflect the distinctive demands of entrepreneurship education, which includes guiding opportunity recognition, supporting idea development, and steering evidence-based discussion (Arbaugh, 2019; Yandra et al., 2021; Zhang et al., 2023). Recent study also highlights the importance of psychological drivers such as self-efficacy for entrepreneurial intention, suggesting that instructional design and facilitation should be examined alongside outcomes like engagement and intention in entrepreneurship programs (Abdul Rahman et al., 2024). Together, these insights motivate the need for a concise, context sensitive measure of teaching presence tailored to entrepreneurship blended learning (Zhang et al., 2023).

LITERATURE REVIEW

Teaching presence has been identified as a central factor influencing cognitive, behavioral, and emotional engagement in blended learning. According to (Levinsson et al., 2024), the quality of instructor support and course design significantly affects student engagement. This influence is especially important when learners have different levels of self-regulation, as it shapes their ability to manage tasks and stay motivated. When teaching presence is weak, students' participation and emotional involvement tend to decline (Wang, Y., 2024). In entrepreneurship education, learners require more exploration of new ideas, reflection, and continuous interaction (Tomy & Pardede, 2020). Therefore, a strong teaching presence that fulfil the nature of entrepreneurship course need is essential to sustain engagement and foster the reflective and interactive processes necessary for entrepreneurship learning.

Moreover, within the context of entrepreneurship education, teaching presence has gained increasing attention for its role in shaping students learning outcomes. Makaya et al. (2023) explained that entrepreneurship education has moved beyond traditional knowledge transmission toward a more conscious and interactive learning model. Whereas, Mahmud et al. (2020) found that teaching presence contributes significantly to student performance, particularly in sustainability related topics where lecturer guidance and facilitation creates meaningful learning experiences. In the meantime, Wang et al. (2022)

quantified these effects and showed that teaching presence dimensions accounted for 45.3 percent of behavioural engagement, 34.3 percent of cognitive engagement, and 40.9 percent of emotional engagement. Their findings indicate that elements such as instructional design, lecturer facilitation, assessment practices, and technology support are essential for maintaining student involvement.

Although teaching presence is widely recognized as a critical component of effective blended learning, there remains a need for validated instruments specifically designed for entrepreneurship education. Existing scales were primarily developed for general online learning or other academic disciplines and may not adequately capture the distinctive features of entrepreneurship courses. These courses require students to engage in problem-based thinking, generate innovative business ideas, and participate in collaborative discussions. Consequently, teaching presence items must be adapted to reflect these unique learning characteristics. Developing a reliable and valid measurement tool will enable educators to better understand students' perceptions of teaching presence and identify areas for instructional improvement.

Given these concerns, it is essential to examine teaching presence within the context of blended entrepreneurship courses. Blended learning has become a preferred approach in higher education because it combines the flexibility of online learning with the interactive benefits of face-to-face instruction, enabling students to access diverse resources while maintaining meaningful engagement with instructors and peers (Han & colleagues, 2023). This approach is particularly relevant for entrepreneurship education, which requires active participation, collaboration, and problem-solving. As these courses aim to cultivate future innovators and business creators, teaching presence plays a pivotal role in shaping students' motivation, readiness, and intention to engage in entrepreneurial activities. Accordingly, this study seeks to construct and validate a teaching presence instrument specifically designed for undergraduate entrepreneurship education. The instrument is tailored for blended learning environments that integrate physical classroom interaction with digital platforms. Its development provides a valuable contribution to understanding how teaching presence supports learning processes in digitally enhanced entrepreneurship settings.

METHODOLOGY

This study employed a quantitative research design to construct and validate a teaching presence instrument suited for undergraduate entrepreneurship blended learning. The methodological procedures included item adaptation, expert validation, pilot data collection, and Exploratory Factor Analysis (EFA) to confirm the dimensionality of the instrument. The methodological approach followed established guidelines for instrument development, particularly for studies involving the Community of Inquiry (CoI) framework and blended learning environments (J. B. Arbaugh, 2019).

Sampling Procedure

A total of 130 undergraduate students were selected from social sciences and humanities as well as science and technology programs at UiTM Perlis. All participants were enrolled in an entrepreneurship course, representing diverse academic backgrounds relevant to entrepreneurship education. A simple random sampling technique was employed for the pilot study to ensure that every student in the target population had an equal probability of selection (Cathrice, 2021). This sample size is consistent with recommendations for exploratory factor analysis in exploratory research, thereby supporting the adequacy of the data for subsequent analyses (Ocy et al., 2025).

Data Collection

The online questionnaire was administered using a Google Form link that was disseminated through all lecturers in charge for Principles of Entrepreneurship course during the semester. The link was shared directly with their students who had fully completed the entrepreneurship subject, ensuring that all respondents possessed adequate exposure to the course content prior to participating in the study. All participants were undergraduate students drawn from social sciences and humanities as well as science and technology programs. This composition reflects the diverse disciplinary backgrounds of learners enrolled in the entrepreneurship courses, namely Principles of Entrepreneurship and Technology Entrepreneurship. The respondents were approached after they had completed the respective entrepreneurship courses. Their varied academic profiles provided an appropriate and meaningful context for examining teaching presence within an entrepreneurship blended learning environment. Students were informed about the purpose of the research and were assured that their participation was voluntary and that all responses would remain confidential. The data collection process was conducted over a period of approximately two weeks, during which students were invited to complete the questionnaire at their convenience. At the end of the data collection time, a total of 130 completed responses were received. Each submission was checked for completeness and adherence to the inclusion criteria before being accepted for analysis.

Instrument

The instrument used in this study was designed to measure teaching presence based on the Community of Inquiry (CoI) framework. Specifically, it consisted of 13 items adapted from (J. B. Arbaugh, 2019), Zhang et al. (2023), and Yandra et al. (2021). To ensure contextual relevance, these items were modified to reflect the characteristics of an undergraduate entrepreneurship blended learning environment. Furthermore, they were organized into three dimensions of teaching presence: Design and Organization (TPDO), Facilitation (TPF), and Direct Instruction (TPDI) (J. B. Arbaugh, 2019). For data collection, responses were recorded on a 7-point Likert scale ranging from “strongly disagree” to “strongly agree,” which allowed enough variability and accurate assessment of students’ perceptions (Ankur Joshi, Saket Kale, Satish Chandel, 2015). In addition, demographic questions such as gender, academic program, and prior experience with blended learning technologies were included to provide a deeper contextual understanding of the participants. To establish the quality of the instrument, face and content validation were conducted. According to Van Horn et al. (2023), validity refers to the extent to which a score accurately represents the intended concept, whereas reliability indicates the consistency of the measurement and its resistance to random errors. In other words, a reliable instrument produces stable results, while validity reflects the accuracy of the measurement (Pandey & Pandey, 2021).

Generally, validity can be assessed through three approaches: face validity, content validity, and criterion validity (Zhu et al., 2024). Face validity concerns whether the items appear to measure the intended concept, while content validity examines whether the items adequately represent all aspects of that concept. In this study, one language expert and two data analysis experts reviewed the items for clarity, readability, and suitability for quantitative analysis. Additionally, two entrepreneurship education experts evaluated the items for conceptual alignment and relevance to teaching presence in a blended learning context. Based on their feedback, the instrument was refined to improve clarity and relevance before pilot testing. Finally, the validated items were used in the pilot study and analyzed through Exploratory Factor Analysis (EFA) to identify their underlying structure (Kozan & Richardson, 2014; Wang et al., 2024).

The Exploratory Factor Analysis (EFA) Procedure

To determine and quantify the dimensionality of the items measuring the construct, this study employed Exploratory Factor Analysis (EFA) on the collected data. EFA is widely recognized as a robust technique for identifying latent structures and validating measurement instruments in educational and social science research (Widaman & Helm, 2023; Goretzko, 2025). In particular, many scholars emphasize its importance when assessing whether items cluster into distinct dimensions as theorized in prior studies (Sigudla & Maritz, 2023; Hussain et al., 2023).

Moreover, when items are adapted from different domains and applied to a new context, their dimensionality may shift. Such changes often occur due to variations in cultural background, socioeconomic conditions, and the time elapsed since earlier studies (Du, 2024). Consequently, the current study anticipated the emergence of new factor structures, given its focus on a novel setting and population. This expectation aligns with recent findings that underscore the need for rigorous validation whenever instruments are adapted for different educational environments (Abd Mannan et al., 2025; Ocy et al., 2025).

RESULTS

EFA for Teaching Presence

There were 13 teaching presence items were analyzed using Exploratory Factor Analysis to determine the underlying dimensionality of the instrument. Before extracting factors, the Kaiser Meyer Olkin (KMO) measure and Bartlett Test of Sphericity were examined to verify sampling adequacy and factorability of the dataset (Acar Govender & Ozkan, 2022). Table 1 displays the descriptive statistics for each item used to measure the construct. As advised by (Awang et al., 2016; Hoque et al., 2018; Bahkia et al., 2019), a wide range of options were provided on an interval scale from 1 (strongly disagree) to 7(strongly agree). To comprehend the distribution of the data, the standard deviation was determined. Based on the values for the error and variance to determine the mean, standard deviation determines the normal distribution of the data. The means and standard deviation for each item are displayed in Table 1.

Table 1

Mean and Standard Deviation of Teaching Presence Dimensions in Entrepreneurship Blended Learning context

Item	Dimension	Statement	Mean	Std. Deviation
TPDO1	Design & Organization	My entrepreneurship class lecturer talked about important topics in a clear way.	5.93	1.24
TPDO2		The goals of my entrepreneurship class were explained clearly by my lecturer.	5.97	1.11
TPDO3		My lecturer provided clear instructions on how to participate in entrepreneurship class learning activities.	6.01	1.13

Item	Dimension	Statement	Mean	Std. Deviation
TPDO4		My lecturer made sure all students knew about important deadlines for learning tasks.	6.12	1.00
TPF1	Facilitation	My lecturer helped me learn by showing out all up to date entrepreneurship issues and knowledge.	5.89	1.09
TPF2		My lecturer was helpful in guiding the blended class toward learning entrepreneurship topics in a way that helped me understanding the topic more.	5.92	1.09
TPF3		My lecturer helped in keeping students engaged and involved in meaningful blended class discussions.	5.88	1.07
TPF4		My lecturer kept the students on task, which helped me learn.	5.88	1.07
TPF5		My lecturer encouraged students to explore new idea in this course.	5.90	1.08
TPF6		Lecturer actions increased the development of a positive feeling towards blended learning community among students.	5.93	1.07
TPDI1	Direct Instruction	My lecturer assisted in focusing the conversation on entrepreneurship topic in a way that helped my blended learning.	5.92	1.06
TPDI2		My lecturer provided feedback that helped me understand my strengths and weaknesses.	5.85	1.05
TPDI3		My lecturer responded quickly to my questions in blended class.	5.92	1.06

The results of

Table **1** show KMO and Bartlett Test. The KMO statistic for the 13 items was 0.92, indicating excellent sampling adequacy for factor extraction. Values above 0.80 are typically described as meritorious and those in the 0.90 range as excellent, thereby supporting the suitability of the dataset for exploratory factor analysis. Consistently, the Bartlett test of sphericity was significant, $\chi^2(78)$ equals 2362.63, p less than .001, rejecting the identity matrix and confirming that inter item correlations are sufficiently large for structure detection. Collectively, these diagnostics indicate that the correlation structure meets standard prerequisites for factor extraction and rotation in exploratory factor analysis and principal component analysis.

Table 1

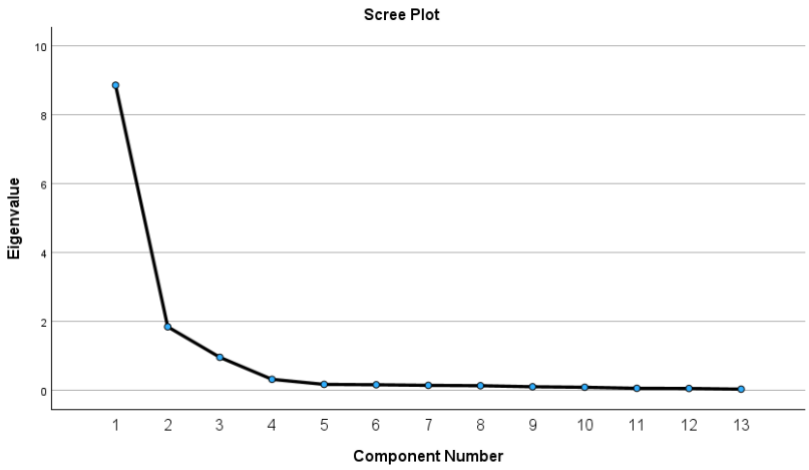
The KMO and Bartlett's Test Score

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.92
Bartlett's Test of Sphericity	Approx. Chi-Square	2362.63
	df	78
	Sig.	<.001

Moreover, the scree plot in Figure 1 shows a sharp drop in eigenvalues from Component 1 to Component 2, followed by a marked leveling off from Component 3 onward, indicating an elbow at Component 2. In line with Cattell's scree test, components to the left of this elbow are retained because they capture the substantive common variance, while those to the right contribute only marginal increments (Cattell, 1966; den Reijer et al., 2024). Consistently, applying the eigenvalue greater than one rule supported retaining two components, a criterion that remains widely used and has seen renewed theoretical discussion in recent work on when the rule is valid (Kaiser, 1960; Wang et al., 2025).

Figure 1

The scree plot for Teaching Presence Instrument Components



Dimensions and Total Variance

Table 3 below confirms that two components exceeded the threshold. Component 1 had an eigenvalue of 9.03 and explained (69.45%) of the variance, and Component 2 had an eigenvalue of 1.76 explaining an additional (13.55%). Together they accounted for (83.00%) of total variance, indicating a strong and parsimonious latent structure. After Varimax rotation, variance was redistributed to improve interpretability, with Component 1 accounting for (48.33%) and Component 2 for (34.67%) of variance. Varimax is an orthogonal rotation that simplifies loadings by maximizing the variance of squared loadings within each factor and is routinely recommended to obtain a clearer simple structure when factors are assumed uncorrelated (IBM, 2023; Kaiser, 1958). Therefore, the elbow at Component 2 and the eigenvalue

and variance criteria provide convergent evidence that two dominant components should be retained for interpretation in this dataset (Braeken & van Assen, 2017),

Table 2

Total Variance Explained by Principal Component Analysis for Teaching Presence

Total Variance Explained									
	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.03	69.45	69.45	9.03	69.45	69.45	6.28	48.33	48.33
2	1.76	13.55	83.00	1.76	13.55	83.00	4.51	34.67	83.00

Extraction Method: Principal Component Analysis.

As shown in Table 4, the rotated component matrix presents the components and their associated items identified through the exploratory factor analysis. Consistent with recommended practice in scale development, items are evaluated based on the strength and clarity of their factor loadings to ensure construct validity and interpretability (Acar-Govender & Ozkan, 2022; Mirabelli et al., 2022). In line with prior methodological guidance, a minimum factor loading threshold of 0.60 was adopted as the criterion for item retention, as loadings at or above this level indicate a substantial association between an item and its underlying component (Finch, 2020; Kim et al., 2025).

The results indicate a clear two-component structure. Items related to Teaching Presence Design and Organization (TPDO1–TPDO4) loaded strongly on Component 2, with factor loadings ranging from 0.82 to 0.90, demonstrating a coherent and well-defined construct. Items measuring Teaching Presence Facilitation (TPF1–TPF6) loaded strongly on Component 1, with loadings between 0.89 and 0.93, indicating a robust and internally consistent dimension. Additionally, two Direct Instruction items (TPDI1 and TPDI2) met the retention criterion, with loadings of 0.61 and 0.60, respectively, and were therefore retained within Component 1. The third Direct Instruction item (TPDI3) did not exhibit a salient loading and was consequently excluded from the final factor structure. Overall, the rotated solution demonstrates strong factor loadings, minimal cross-loadings, and conceptually meaningful clustering of items. These results provide empirical support for the adequacy of the retained items and confirm the structural validity of the two-component measurement model.

Table 3

The components and their respective items

Rotated Component Matrix[a]		
	Component	
	1	2
TPDO1		0.85
TPDO2		0.89
TPDO3		0.90
TPDO4		0.82
TPF1	0.89	

Rotated Component Matrix[a]		
	Component	
	1	2
TPF2	0.93	
TPF3	0.91	
TPF4	0.91	
TPF5	0.90	
TPF6	0.92	
TPDI1	0.61	
TPDI2	0.60	
TPDI3		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 3 iterations.

Internal Reliability of Teaching Presence Instrument

Finally, the internal reliability of the Teaching Presence instrument was assessed using Cronbach's alpha, a widely accepted measure of internal consistency. As shown in Table 5, the results demonstrate strong reliability across all dimensions. Specifically, the Design and Organization dimension, which comprises four items, achieved an alpha coefficient of 0.94, exceeding the commonly accepted threshold of 0.70 for excellent reliability (Hair et al., 2021; Taber, 2021). Similarly, the Facilitation dimension, with six items, recorded an alpha value of 0.98, indicating very high internal consistency among its items. In addition, the Direct Instruction dimension, consisting of three items, produced an alpha of 0.96, which also falls within the excellent range. Overall, the entire 13-item scale yielded a reliability coefficient of 0.96, further confirming the robustness and stability of the measurement structure (Taherdoost, 2016; Cho & Kim, 2023). Therefore, these findings provide strong evidence that the instrument is appropriate for assessing teaching presence among undergraduate students in entrepreneurship blended learning courses.

Table 4

The Teaching Presence's Internal Reliability

Dimensions	No. of Items	C. Alpha
DO: Design & Organization	4	0.94
F: Facilitation	6	0.98
DI: Direct Instruction	3	0.96
Total	13	0.96

DISCUSSION

This study developed and validated a teaching presence instrument specifically designed for undergraduate entrepreneurship blended learning environments. Grounded in the Community of Inquiry framework, the instrument reflects core aspects of teaching presence as experienced by students in entrepreneurship blended learning contexts (Arbaugh, 2019). To ensure contextual relevance, items were adapted from established studies and refined through expert review to improve clarity, conceptual alignment, and

suitability for blended learning. The Exploratory Factor Analysis results provide strong empirical support for the instrument's structure. A clear two components solution emerged, demonstrating conceptual coherence and measurement stability within the entrepreneurship blended learning context. This finding suggests that students perceive teaching presence primarily through integrated dimensions of instructional design and facilitation, rather than as strictly separate constructs. Such a pattern is reasonable in entrepreneurship courses, where facilitation and instructional guidance often operate together during idea development, discussion, and problem-solving activities.

The robustness of the measurement model is further supported by reliability and factorability indicators. All retained items achieved factor loadings above the recommended threshold of 0.60, while the Kaiser Meyer Olkin value exceeded accepted minimum levels and Bartlett's Test of Sphericity was significant. These results confirm that the dataset was appropriate for factor analysis and that the items performed well within their respective components. The overall reliability coefficient of 0.96 for the 13 items scale indicates excellent internal consistency and supports the stability of the instrument. From a theoretical perspective, the findings reinforce the continued relevance of the Community of Inquiry framework in entrepreneurship blended learning environments. It also suggesting that teaching presence dimensions may manifest differently depending on instructional context. This aligns with recent studies emphasizing engagement, interaction, and learning outcomes in entrepreneurship education (Nasirun and Shahidan, 2024; Abdul Rahman et al., 2024). By capturing how students experience teaching presence in blended entrepreneurship courses, the instrument offers a practical diagnostic for identifying strengths in instructional design and facilitation.

Overall, this study contributes to practice by providing lecturers and instructional designers with a validated tool to evaluate teaching presence and identify areas for improvement. These may include structuring learning tasks more clearly, facilitating meaningful discussions, or strengthening instructional guidance during blended activities. In doing so, the instrument supports evidence based instructional decisions and enhances student centered learning in entrepreneurship education.

Contribution

Building on the findings discussed earlier, this study offers several important contributions to higher education research, particularly within the context of entrepreneurship blended learning. First, it introduces a validated teaching presence instrument that is specifically designed for undergraduate entrepreneurship courses. This contribution addresses a clear limitation in existing measurement tools, which have largely been developed for general online learning settings and do not fully capture the instructional characteristics of entrepreneurship education. By aligning the items with entrepreneurship learning activities such as business ideation, collaborative problem solving, and reflective practice, the instrument better represents how teaching presence is experienced in this context. In addition to its substantive contribution, the study also provides a meaningful methodological contribution. A systematic and rigorous validation process was employed, including careful item adaptation from established instruments, expert review to ensure clarity and contextual relevance, and the application of Exploratory Factor Analysis to examine construct validity and reliability. The resulting factor structure supports the applicability of the Community of Inquiry framework in entrepreneurship blended learning environments, while also highlighting that teaching presence may be perceived as an integrated construct rather than as strictly separated dimensions. This finding strengthens the theoretical value of the framework by demonstrating its adaptability across instructional contexts.

Beyond theory and methodology, the study offers clear practical value. The validated instrument can be used by lecturers and instructional designers to evaluate teaching presence in entrepreneurship blended

learning courses and to identify areas for instructional improvement. These areas may include the organization of learning tasks, the facilitation of meaningful interaction, and the effectiveness of instructional guidance. Furthermore, the instrument allows educators to systematically monitor how teaching presence relates to student engagement and participation, which are central goals in entrepreneurship education. Therefore, these contributions support broader educational objectives by promoting high quality, student focused learning experiences in blended higher education settings.

Recommendations

Based on the findings of this study, several directions for future research are recommended. To enhance the generalizability of the instrument, future studies should apply it to larger samples across multiple institutions. Although the instrument has been implemented with students from social sciences and humanities and science and technology disciplines, comparative studies across disciplines, delivery modes, or institutional types such as polytechnic institutions would provide deeper insight into contextual differences in perceived teaching presence. Future research is also encouraged to examine the predictive role of teaching presence by exploring its relationships with related learning constructs, including cognitive engagement, self-regulated learning, entrepreneurial intention, and learning satisfaction. Such investigations would extend understanding of how teaching presence influences learning processes and outcomes in entrepreneurship blended learning environments. In addition, longitudinal research designs are recommended to capture changes in students' perceptions over time and to explore the sustained impact of teaching presence on engagement and academic performance.

From a methodological perspective, further validation using Confirmatory Factor Analysis with independent samples is recommended to strengthen evidence for the stability and robustness of the factor structure. More advanced analytical approaches, such as structural equation modeling or learning analytics, may also be employed to examine complex relationships between teaching presence, student engagement, and learning outcomes. In practice, educators may use the instrument as a reflective and diagnostic tool to evaluate their instructional design and facilitation strategies. Instructional designers and academic developers can also apply the instrument to guide the development and evaluation of entrepreneurship blended learning courses aligned with the Community of Inquiry framework. Collectively, these efforts can contribute to the continuous improvement of entrepreneurship education and the development of effective and research informed blended learning practices.

CONCLUSION

This study successfully validated a teaching presence instrument tailored for undergraduate entrepreneurship blended learning. The instrument demonstrated strong psychometric properties, including a clear two components structure, excellent internal consistency, and satisfactory factorability indicators. These results confirm that the instrument is both reliable and appropriate for assessing students' perceptions of teaching presence in blended entrepreneurship courses. By offering a context sensitive and empirically supported measurement tool, this study enables educators and researchers to better understand how teaching presence shapes engagement, comprehension, and participation in digitally enhanced entrepreneurship learning environments. The instrument provides a practical foundation for improving instructional design and facilitation practices, thereby supporting more effective and engaging blended learning experiences in higher education.

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