PAPER

A Systematic Literature Review on the Relationships between Social Presence, Learning Satisfaction and Persistence in Online Learning

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ABSTRACT

Online learning has gained prominence due to numerous success stories, becoming a vital component and instrument for reforming classrooms in higher vocational education. However, the physical detachment inherent in online self-directed learning has raised concerns about student disengagement and isolation during the learning process. Social presence theory provides a unique perspective, methods, and tools for researching online learning. This paper presents a comprehensive analysis of the existing literature, with a focus on social presence, learning satisfaction, and persistence. The results reveal the intricate impact of social presence on learning satisfaction and persistence in online learning environments. A systematic literature review (SLR) was conducted to uncover research findings from May 2013 to June 2023. The selected articles underwent a thorough assessment, and duplicates were removed. The updated criteria for conducting systematic reviews and meta-analyses were used for the literature review. The research team critically analysed, finalised, and deliberated on the significance of the SLR. Out of the 220 papers initially considered, 28 met the specific criteria for adjustment and inclusion/exclusion.

KEYWORDS

social presence, learning satisfaction, learning persistence, online learning

1 INTRODUCTION

The influence of information technology continues to grow, as evidenced by its expanding range of applications and increasing importance. With the onset of the Fourth Industrial Revolution and Education 4.0, the integration of technology into the classroom by teachers has become essential [1]. The integration of digital technologies in education has accelerated in recent years, fundamentally transforming the educational system.

The integration of information technology with higher education has led to a variety of teaching and learning methods. Online education has emerged as a significant tool for deepening the integration of technology with traditional learning. The COVID-19 pandemic has led to the widespread adoption of blended learning, which combines online and offline practices in schools worldwide, and has transformed perspectives on educational technology. Online learning, with its potential to advance educational equality, is positioned to establish a new standard for improving learning effectiveness.

Online learning, which involves the digital delivery of content and instruction [2], enables remote access to educational resources, discussions, assignments, and interactions with educators and classmates. This method of learning has experienced significant growth, especially during the COVID-19 pandemic. While the beneficial effects of online learning on learning efficacy are recognised, it also presents unique challenges. Concerns have emerged regarding student disengagement and isolation as a result of remote learning [3], emphasising the need to address isolation and improve retention [4].

Drawing on social cognitive psychology and constructivism, the significance of social presence in the internalisation of knowledge has gained recognition [5]. The concept of social presence refers to the extent of consistent social and emotional cues recognised by communicators when interacting through communication platforms or face-to-face discussions. Social presence theory provides a unique perspective and tools for researching online learning, making it a significant pedagogical concept in this area. Empirical research indicates that the presence of social interaction is a crucial predictor of outcomes such as satisfaction, perceived learning, and persistence [6–9]. It affects learning through its psychological impact on students. Enhancing the sense of social presence can help alleviate or prevent negative experiences in online learning environments.

Learning satisfaction encompasses the attitudes, perceptions, and emotional responses that learners have towards their educational experiences. This concept is a crucial factor in a successful education, dependent on a variety of factors. [10] further contends that learner satisfaction is influenced by the dynamics of engagement, academic performance, and interaction quality. Learning satisfaction is a crucial aspect of assessing and overseeing higher education. It reflects students' satisfaction with their learning experience and can be used to assess the quality of the college curriculum [11].

Learning persistence is defined as the ability to continue working towards an educational goal despite facing obstacles or setbacks. Influences include external factors such as societal and cultural influences [12], as well as internal aspects like intrinsic motivation and self-regulation skills [13]. Developing persistence is crucial for success in online learning. Studies have shown that factors such as student interaction and emotional engagement are significant contributors to maintaining learning persistence in online environments [13].

In online universities, where all educational activities take place on the internet, learners' satisfaction and persistence are often considered crucial factors for success [14]. The relationship between social presence and satisfaction in learning has been consistently acknowledged in various research studies, with a prevailing indication of a positive correlation. For instance, a study by [15] emphasises the significant influence of social presence on students' satisfaction with online courses. Parallel findings have been supported by studies [16–18], which found positive correlations between social presence and satisfaction with various aspects of online learning, including discussions, teaching quality, and academic performance. The relationship between social presence and learning persistence has been a focal point in numerous studies, with a consensus indicating a positive correlation between the two constructs. Studies conducted by researchers [19–21], for instance, demonstrate a strong positive correlation between social presence, learning engagement, self-regulation, and learning persistence.

2   PURPOSE OF THE REVIEW

The primary objective of this review is to offer an overview of the current understanding of the subject matter. This systematic review compiles and examines the scientific research on the topic, with the aim of addressing the research questions formulated through a rigorous and transparent approach. The aim of this research paper is to investigate the relationship between social presence, learning satisfaction, and learning persistence. This could provide valuable insights for future studies aiming to develop teaching methods that enhance student outcomes. The research questions were formulated based on the following stages of a systematic literature review (SLR):

1. What do previous studies reveal about the connection between social presence, learning satisfaction, and persistence?
2. What are the main findings related to the relationship between social presence, satisfaction with learning, and persistence?

Considering the research questions above, the following are the objectives of this study:

1. To provide an initial overview of the procedure, it is important to identify essential principles that can be used to organise, document, and outline reports on SLR, present resources, align standards, and discuss the information gap.
2. To assess articles that examine the connection between social presence, learning satisfaction, and persistence.

The above statement was constructed following the preferred reporting items for systematic reviews and meta-analyses (PRISMA) model, addressing all inquiries raised during the investigation. Therefore, the sequence of the review and the framework of the writing will be explained in the following sections.

3   METHODOLOGY

The SLR is a research method that provides a comprehensive and organised approach to exploring, evaluating and integrating existing literature on a specific topic or research question. It follows a predetermined sequence to identify, select, evaluate and assimilate relevant research articles [22]. The procedure begins by formulating a strategy, identifying the research objective and defining inclusion and exclusion criteria [23]. Subsequently, a comprehensive search for related articles across databases and other platforms is conducted [24]. These identified articles are evaluated against pre-established benchmarks for relevance [25]. The chosen articles are then critically assessed for their quality and relevance to the research objective. In the end, the gathered insights from these articles are combined and analysed to draw conclusions and identify existing trends or gaps in the literature. In essence, a SLR is a rigorous and methodical research technique that systematically searches, selects, evaluates, and compiles literature on a designated topic or research query. It provides a holistic perspective on the topic and guides future research trajectories.

Meta-evaluation serves as a quantitative synthesis of data from diverse studies with the goal of addressing a specific challenge [26]. According to [27], employing SLR to investigate advancements and implications in a specific field is a common research practice. In this context, our study utilises a modified PRISMA framework to systematically uncover, compile, and present comprehensive relevant information from

previous research, demonstrating the current state of the field. PRISMA's insights enable researchers to improve the depth and breadth of their article assessment [28], while maintaining focus on the study's key objectives. The following depiction provides a comprehensive overview of the literature across different stages. Figure 1 illustrates the methodology used in our study.
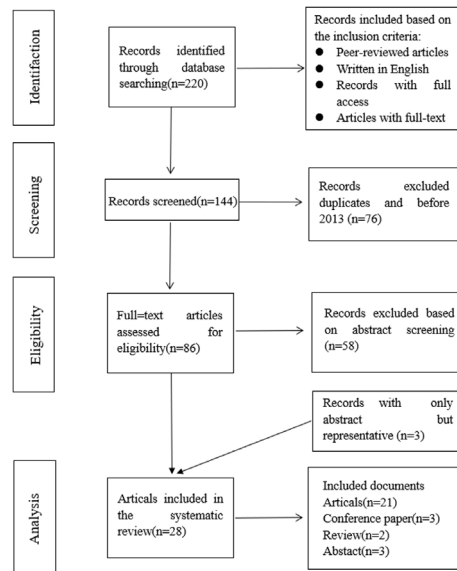

Fig. 1. PRISMA diagram showing the number of documents at each stage of the screening process

3.1 Searching strategies

A targeted search strategy was formulated to locate relevant articles using the terms "social presence and learning satisfaction" or "social presence and learning persistence." The search was conducted across three major databases: ScienceDirect, Scopus, and Web of Science, accessible via their respective URLs: https://www.sciencedirect.com/, https://www.scopus.com/sources/, and https://www.webofscience.com/wos. The search covered articles, reviews and conference proceedings that were only available in English.

3.2 Selection standards

The primary goal of this study was to examine the connection between social presence, satisfaction with learning, and learning persistence. The research focused on various areas, encompassing approximately 220 articles from fields such as education, social sciences and the humanities. The study was conducted from 2013 to 2023, deliberately excluding any articles published before this period. This investigation took a global approach, considering papers from around the world. As a result of redundancy and being outside the specified timeframe, 76 articles were removed, leaving 144 articles for more in-depth analysis.

3.3 Assessment quality

The focus of this study was on recent research articles and conference papers. To maintain the integrity of the review, all duplicates were rigorously verified. To ensure the quality and relevance of the educational content included in the analysis,

the abstracts of the publications underwent rigorous scrutiny for evaluation and refinement. After reviewing the abstracts of 144 articles, 86 were selected for further analysis. Following a full-text review of these 86 articles, 25 articles were selected for inclusion. To ensure the comprehensiveness and reliability of the literature samples, three representative articles were identified and added to the literature analysis when screening papers with only abstracts available. These three abstracts are detailed and encompass a comprehensive research background, objectives, and conclusions. A total of 28 articles were selected for inclusion in the final count.

3.4 Extraction of data

The research findings were exclusively presented in English, encompassing papers from conferences, journal articles, and review papers published between 2013 and 2023. During this review, a total of 89 publications were identified. These works were studied to determine the research objectives. The following points, related to social presence, learning satisfaction, and learning persistence, as cited in previous research, are as follows:

1. Social presence represents learners' personal perceptions and serves as a crucial benchmark for assessing the effectiveness of online education [29].
2. The satisfaction derived from a course plays a crucial role in influencing learning outcomes, guiding decisions to either continue or exit the course [30]. According to [31], student motivation and effectiveness is significantly influenced by their satisfaction with online learning.
3. In online learning, persistence, which includes elements of motivation, emotion, cognition, and behaviour, brings significant benefits to students. It contributes to higher online course completion rates, superior learning outcomes, and elevated performance and achievements [32].
4. Scientific analyses have determined that social presence positively influences both learning satisfaction and persistence.

To facilitate the review, the authors organised the content into a structured table. Out of the collected articles, those that met the set criteria were sifted through, and 28 of them underwent an in-depth evaluation. The following section offers a comprehensive overview of these findings, followed by a detailed discussion of the resulting outcomes. A summary of the evaluated research is available in Table 1.

4 RESULT

From the 28 studies reviewed, apart from two literature reviews, the majority of the samples consisted of college students. Two studies focused on vocational college attendees, another on university students with special needs, and yet another used a sample from an online course where 80% had tertiary education backgrounds. This indicates a wealth of research conducted in universities on topics such as social presence and satisfaction with learning in digital environments. However, there is a noticeable gap in studies focusing on primary and secondary education. Out of the 28 researchers, one focused on the influence of a teacher's social presence on student satisfaction. Three other studies investigated the connections between keywords in different online situations, including virtual tours (VT) [33], robot-mediated communication [34] and web videoconferencing [35], while the rest focused on online, blended, or hybrid learning environments.

Table 1. A summary of the studies that were reviewed

No.	Author	Related Items	Country	Research Objectives	M	P (Quan/Qual)	Findings
1	Giesbers et al. (2014) [35]	Social presence, Learning satisfaction	Netherlands	With the rise of easy-to-use synchronous communication tools, the applicability of the CoI model is questioned. This study examines if increased social presence influences learning satisfaction and pass rates.	Quan	418	Students using web-videoconferencing reported clearer goals and tasks but didn't experience increased overall satisfaction. Moreover, pass rates decreased over four years compared to using only discussion forums. The efficacy of web-videoconferencing in e-learning warrants further study.
2	Horzum (2015) [36]	Social presence, Learning satisfaction	Istanbul	Many studies have delved into the aspects of interaction, structure, social presence and satisfaction in online learning, but none have looked at how these elements are interconnected. The goal of this research is to explore the relationships among these variables.	Quan	205	This study found a negative link between Moore's course structure and interaction dimensions in transactional distance theory. Online students' social presence increased with interaction but decreased with structured courses. Additionally, a higher social presence led to greater online learning satisfaction.
3	Rutz and Ehrlich (2016) [37]	Social presence, Learning persistence	America	To identify and evaluate technologies and pedagogies in online learning that enhance learner persistence, given the evidence that students' feelings of connection and support are crucial for their continued engagement in a program.	Quan	40	Interactive feedback enhances teacher and student presence, boosting student persistence in learning. While more time-consuming than traditional methods, its value in the COI model is evident. However, instructors should weigh its benefits against time investment, especially in high-retention courses.
4	Paquette (2016) [38]	Social presence, Learning persistence	America	In an effort to understand how teachers can incorporate social presence into their virtual classes, this exploration seeks to address the identified lack of comprehension regarding its ability to boost student enthusiasm, continuity, and retention, consequently altering the entire course environment.	Quan	50	The findings suggest that "training the instructor" based on social presence can foster a more engaging course, potentially enhancing motivation, persistence, and retention that institutions value today.
5	Kozan (2016) [39]	Social presence, Learning satisfaction	America	The objective of this research was to assess the forecasting ability of teaching, cognitive, and social presence in relation to cognitive load, taking into account the perceived satisfaction with learning.	Quan	103	The study indicates that presence significantly predicts types of cognitive load and overall load, especially when paired with perceived satisfaction in learning. Nevertheless, the function of social presence in this context is not pronounced. These insights offer valuable contributions to both theoretical and practical understandings.
6	Hsu et al. (2017) [40]	Social presence, Continuous intention	Taiwan, China	This study explores the elements affecting the sustained use of the E-tutoring system, emphasizing self-driven motivators and both social and technological impacts.	Quan	119	The study validates that enjoyment and social presence significantly drive e-tutors' intention to continue using e-tutoring systems. These findings can shape college online tutorial expectations and e-tutoring development.

(Continued)

Table 1. A summary of the studies that were reviewed *(Continued)*

No.	Author	Related Items	Country	Research Objectives	M	P (Quan/Qual)	Findings
7	Weidlich and Bastiaens (2017) [41]	Social presence, Learning satisfaction	German	This research endeavours to refine the SIPS (Sociability, Social Interaction, Social Presence, Social Space) framework, illustrating the interrelationships between these elements and their connection to outcomes such as satisfaction.	Quan	162	Findings affirm that a congenial learning environment promotes social interaction, which in turn cultivates social presence and a robust social space, subsequently shaping the calibre of the learning journey. Notably, when assessed straightforwardly, social presence doesn't influence satisfaction.
8	Gleason and Greenhow (2017) [34]	Social presence, Learning persistence	America	To explore the obstacles in applying blended teaching, with a specific emphasis on the possible decrease in social presence—the ability of students to incorporate their individual characteristics into the learning setting— and the resulting effects on student involvement, persistence, and scholastic achievement.	MI	13	Robot-mediated Communication (RMC) enhances online students' embodiment and social presence, positively impacting participation, persistence, and achievement. However, audio-visual and manoeuvrability challenges remain potential barriers.
9 LR	Richardson et al. (2017) [42]	Social presence, Learning satisfaction		Through this meta-analysis, we analysed the primary studies' variables to discern patterns in student outcomes, such as perceived learning and satisfaction, in connection with social presence by examining disparities between the studies.			(a) The relationship between social presence and satisfaction differed depending on the course's length, subject focus, and the scale used to gauge social presence; and (b) The association between social presence and perceived learning was affected by factors such as the duration of the course, the field of study, and the intended audience for the course. The consequences and potential paths for subsequent studies are examined.
10	Oyarzun et al. (2018) [43]	Social presence, Learning satisfaction	America	This investigative comparison looked at two methods of student-to-student interaction: planned and situational, assessing their effects on academic success, social presence, the quality of interaction, and fulfilment within asynchronous online classes.	Quan	15 volunteer instructors and 227 students	Intentionally designed interactions boost learner achievement and satisfaction. A strong instructor's social presence elevates student performance and contentment. High-quality interactivity amplifies both the instructors' and learners' social presence and learner satisfaction.
11 LR	Gilpin (2020) [44]	Social presence, Learning persistence		This literature analysis examines the ways in which asynchronous and synchronous dialogues can meet the needs of emerging online learners.			Introducing the emerging online learner persistence framework (EOLPF). This model tailors course design to the values and requirements of budding online learners. By aligning with student values, it optimizes the balance between asynchronous and synchronous interactions to bolster social presence, thereby enhancing learning persistence.

	Author	Keywords	Country	Aim	Method	Sample	Findings
12	Andel et al. (2020) [45]	Social presence, Learning satisfaction	America	Study 1 focused on investigating the impact of asynchronous user remarks on perceptions of social presence. Study 2 aimed to pinpoint those who benefit most from strong perceptions of social presence.	Quan	Study 1–71/ study 2–151	There was a correlation between perceptions of social presence and enhanced perceived learning and contentment. Personality traits influence these connections, indicating that social presence holds more importance for specific individuals, particularly those with reduced conscientiousness.
13	Salimon et al. (2021) [46]	Social presence, e-satisfaction, e-retention	Malaysia	This research seeks to explore how cognitive absorption and perceived social presence impact technology adoption, e-satisfaction and e-retention among undergraduate scholars in Northern Malaysian public universities.	Quan	730	The findings revealed that cognitive absorption increases the perceived utility and simplicity of e-learning, thereby affecting e-satisfaction and e-retention. Though perceived social presence improves ease of use and has effects on e-satisfaction and e-retention, it does not have a substantial influence on perceived usefulness. E-satisfaction is found to have a significant impact on e-retention.
14	Lim and Richardson (2021) [47]	social presence, Learning satisfaction	Korea	This research explored how students' perceptions of social, cognitive, and teaching presence vary and how they predict affective learning outcomes (such as perceived learning achievements and satisfaction) across different academic fields.	Quan	418	The study found that these perceptions were consistent across disciplines, with teaching presence being the most dominant, followed by cognitive and social presences. In different academic fields, the impact of various types of presence on learning and satisfaction varies. For instance, in soft-applied disciplines, students often correlate social presence with a higher level of contentment. In contrast, other fields don't find social presence as influential when compared to other forms of presence.
15	Lee et al. (2021) [11]	social presence, Learning satisfaction	Malaysia	Utilizing the Community of Inquiry (COI) framework, this study aims to pinpoint the factors that enhance students' satisfaction in their online learning experiences.	Quan	432	The research uncovers that both cognitive and social presence have a direct impact on satisfaction in e-learning, while teaching presence exerts an indirect influence, channelled through cognitive and social presence. Additionally, two specific aspects, the quality of the content and the perceived ease of use, function as intermediaries, shaping the relationship between the three forms of presence and the general contentment with online learning.
16	Cofini et al. (2022) [48]	social presence, Learning satisfaction	Italy	The aim was to explore satisfaction with e-learning among university students by assessing elements like quality of life, levels of stress, social influences, and coping strategies.	Quan	471	A correlation was found between e-learning satisfaction and variables like age and attendance in courses. Satisfaction was positively associated with social presence and coping strategies such as self-blame and religious belief, but it was negatively connected to stress and the number of unhealthy days. A particularly strong positive relationship was observed between e-learning satisfaction and social presence.

(Continued)

Table 1. A summary of the studies that were reviewed *(Continued)*

No.	Author	Related Items	Country	Research Objectives	M	P (Quan/Qual)	Findings
17	Zhong et al. (2022) [49]	social presence, Learning persistence	China	This research sought to improve student involvement and continuation in blended synchronous learning. By employing structural equation modelling, we explored the relationships between factors such as self-control, teaching presence and social presence, and how they impact student engagement and persistence in this type of learning environment.	Quan	319	The findings from this study reveal that self-regulation, teaching presence, and social presence are essential elements that significantly affect student engagement and persistence in blended synchronous learning.
18	Santo et al. (2022) [50]	social presence, Learning satisfaction	Italy	In this study, we evaluate how positive and negative emotions act as a link between the cognitive and social aspects of digital learning environments and the enjoyment found in online education.	Quan	353	Cognitive presence (strategic planning) and social presence (interaction) uniquely influence students' emotions, potentially affecting e-learning satisfaction. Our model highlights the intricate interplay between cognitive, emotional and relational factors, echoing findings from earlier studies.
19	Sepasgozar (2022) [33]	Social presence, Learning Satisfaction	Australia	This study illustrates the use of virtual teachers (VTs) in student learning, and their behavior was analysed to determine if it could aid in creating a new virtual teaching acceptance model (VTAM). This model serves as a conceptual structure for evaluating the acceptance of educational technology.	MI	339/31	The results reveal that VTAM, when combined with aspects such as situated learning, immersion and social presence, exerts the most substantial influence on engagement, subsequently enhancing students' satisfaction.
20	Amka and Dalle (2022) [51]	social presence, Learning satisfaction	Indonesia	Utilising the community of inquiry (COI) model, this research investigates the factors affecting students' satisfaction with e-learning, considering online learning readiness as a mediating element.	Quan	178	Both direct and indirect influences on e-learning satisfaction stem from teaching presence, cognitive and social presence, and the quality of content. A positive relationship is identified between students' social presence and their contentment with the e-learning experience.
21	Shi et al. (2023) [32]	social presence, Learning satisfaction, Learning persistence	China	This research sought to explore the determinants of online persistent learning supported by intelligent technology (OPLSIT), focusing on dimensions such as user engagement, inherent trust and learning satisfaction.	Quan	385	Learning satisfaction greatly influences OPL. Factors such as learning intent, social engagement and cognitive engagement enhance learning satisfaction, indirectly boosting OPL.

No.	Author	Variables	Country	Objective	Method	N	Findings
22	Liu et al. (2023) [52]	social presence, Learning satisfaction	China	Study 1 investigated the relationship between feedback responses and student contentment using actual data. Building on social presence theory, Study 2 explored how social presence and perceived learning relate to the impact of feedback on student satisfaction, taking into account different levels of student engagement.	Quan	199	Responding to reviews can elevate learning perception and satisfaction by boosting the social presence of learners, whether they are the ones commenting or simply observing. The content of the feedback (the quality of the comments) rather than the quantity (the number of comments) shapes learners' feelings toward online courses.
23	Zhang et al. (2023) [53]	social presence, Learning satisfaction	China	This study explored the impact of teaching, social, and cognitive presences within the CoI framework on the satisfaction of Chinese college students in online learning, taking into account self-regulated learning and emotional states.	Quan	112	The results emphasized a strong link between self-regulated learning and satisfaction in e-learning. Connections were found between teaching and cognitive presences and self-regulated learning, but social presence was not related. The combination of self-regulated learning with teaching and cognitive presences influenced online satisfaction, whereas social presence did not. Additionally, positive emotional states strengthened the connection between self-regulated learning and contentment in the virtual learning environment.
24	Armah et al. (2023) [54]	social presence, Learning satisfaction	Ghana	We aimed to probe deeper into the intricate predictive associations between teaching, cognitive, social, and student presences based on the CoI framework in relation to online course satisfaction.	Quan	347	Structural model evaluations demonstrated a clear predictive bond between student presence and the trio of cognitive, social, and teaching presences. Additionally, connections were found between social-cognitive and social-teaching presences. Conclusively, both social and teaching presences were found to be predictors of satisfaction in online courses.
25	Arsenijević et al. (2023) [55]	social presence, Learning satisfaction	Serbia, Bosnia and Herzegovina, Croatia, Romania, Russia, Slovenija	Our objective was to delve into the satisfaction attributes associated with online learning during the COVID-19 era, focusing on the principles of the CoI e-learning framework.	Quan	808	The positive ties between online learning satisfaction and cognitive, social, and instructional presence, as well as the overall CoI framework, have been confirmed.
26	Yang et al. (2023) [29]	social presence, Learning satisfaction	China	In our research, we crafted a scale to assess and evaluate the emotional response of students towards social presence in real-time online classes. Our aim was to establish the link between social presence and contentment and to offer strategies that could boost online learning outcomes.	Quan	289	Our findings reveal a subdued sense of social presence among students in live sessions. Furthermore, the choice of live platforms plays a role in this perception. A distinct positive association was noted between students' sense of social presence and their satisfaction in live online learning environments. Drawing from these results, we recommend measures to enhance the social presence, serving as a guide for educators in the digital teaching space.

(Continued)

Table 1. A summary of the studies that were reviewed *(Continued)*

No.	Author	Related Items	Country	Research Objectives	M	P (Quan/Qual)	Findings
27	Pangarso and Setyorini (2023) [56]	Social presence, Learning satisfaction	Indonesia	There exists a notable gap in quantitative research concerning the determinants of e-learning satisfaction, especially within the context of private tertiary education, which this research seeks to address.	Quan	722	Feedback from surveys pinpoints the elements of social presence, affirmation, and peer interactions as the key factors influencing e-learning satisfaction amid the pandemic. Additionally, a solid e-learning system quality indirectly boosts learning satisfaction, a connection facilitated by peer-to-peer interactions. These insights should prompt university administrators in Indonesia, especially within private institutions, to address and enhance aspects related to social presence, validation, the quality of the learning system and student interactions during pandemic times.
28	Guo et al. (2023) [57]	Social presence, Learning Satisfaction, continuous intention	China	The primary challenge for online education lies in the perceived subpar learning experience, often leading to elevated dropout rates. This study aims to delve into the impact of the multi-faceted concept of social presence on the behaviors of digital learners.	Quan	237	It was found that aspects related to close-knit and immersive social elements positively affect satisfaction in learning. This subsequently drives the continual engagement of learners in online platforms. Hence, providers of online education platforms should prioritize creating a closely-knit and absorbing online space for their students. This study further offers a nuanced understanding of online education through the lens of social presence for both researchers and industry experts.

Note: M: Method; P: Population; Quan: Quantitative; Qual: Qualitative; and MI: Mixed.

5 DISCUSSION

"Social presence" refers to the perception of others' actual existence in non-face-to-face interactions and the degree of possible communication. Within the surveyed literature, some researchers position it within the CoI framework, examining the connections between cognitive, teaching, and social presence. Some researchers [55] propose a positive correlation between satisfaction with online learning and overall CoI presence, while others, such as [54], suggest that course satisfaction is predicted by social and teaching presence. Some scholars, such as [53], concentrate on the CoI framework, and they have found diverse results regarding how self-regulated learning influences these presences in online satisfaction.

In contrast, other researchers independently analysed social presence and linked it to various aspects of online learning, such as interaction [56], engagement and immersion [57]. In terms of learning satisfaction, numerous studies emphasise its significance, emphasising its benefits in boosting motivation, decreasing dropout rates and reflecting learning outcomes.

While there is a wealth of quantitative research on the connection between social presence and learning satisfaction, there is a scarcity of qualitative studies on the topic [11]. Explore factors such as content quality, perceived ease of use and student-student interaction as key drivers of e-learning satisfaction. The relationship between social presence and learning satisfaction in online environments has been consistently observed and confirmed by numerous studies, indicating a strong positive correlation [29] [54] [56].

However, not all findings are in agreement. According to [53], the impact of social presence on learning satisfaction is not as significant as cognitive and teaching presence. The relationship may be influenced by factors such as personality, course duration, subject area, or measurement scale [45] [42]. Some argue that social presence does not directly affect satisfaction [41], or that its role in predicting cognitive load and learning satisfaction may be less clear [39]. The complexity of social presence's influence on satisfaction in online learning indicates a multifaceted relationship that varies across different contexts and factors.

While numerous studies suggest that social presence can influence learning persistence, there is limited quantitative and qualitative research addressing this connection. The impact of social presence on learning persistence was directly verified using Shin's scale [58] [49]. Most scholars have only provided descriptive language about this relationship. For example, [38] suggests that "training the instructor" to focus on social presence can create a more engaging course environment, potentially improving motivation, persistence, and retention—attributes highly valued by institutions today. Robot-mediated communication (RMC) has been found to enhance the expressiveness and social presence among online students, positively impacting their engagement, persistence, and performance, as suggested by [34]. Through a literature review, [44] proposed a framework for enhancing online learner persistence, arguing that interactions designed with a focus on social presence can positively influence learning persistence. Given this context, as we aim to further explore the connection between social presence and learning persistence, we have included continuous intention and e-retention in our research scope. [57] It is believed that intimate and immersive social factors have a positive impact on learning satisfaction, which in turn leads to a sustained intention to engage in online learning. According to [46], the perceived social presence improves usability and affects e-satisfaction and e-retention.

Only a few articles explore the three concepts of social presence, learning satisfaction, and learning persistence simultaneously. [32] Factors such as learning intention, social presence and cognitive presence have a positive correlation with learning satisfaction, which in turn indirectly strengthens online learning persistence. Similarly, [57] maintains that learning satisfaction significantly influences persistence in online learning. They also emphasise the importance of constructing an immersive online environment from the perspective of social presence.

In summary, most scholars believe that there is a positive correlation between social presence and both learning satisfaction and learning persistence, with the former influencing the latter two. However, with the emergence of new technologies, it is essential that we delve deeper and explore these relationships in various contexts.

6   LIMITATIONS

Despite these findings, a closer examination of the parameters of these research designs reveals that many of the studies had relatively small sample sizes and were conducted in diverse research contexts. As a result, the findings may not be applicable to various student populations and educational settings. The studies nominated cover a wide range of countries, with China being the most frequently represented, followed by the United States. Most research typically selects a specific subject as the study environment, so the impact of different subjects should also be taken into consideration. There is a research gap in the fields of primary and secondary education, as well as in emerging educational technology environments and platforms. Additionally, efforts should be made to increase the research sample size.

7   RECOMMENDATIONS

The current systematic review demonstrates that social presence directly influences, mediates adjustments and impacts learning satisfaction and persistence through various factors. This has become the focal point of research, emphasising the incorporation of information technology into university education. Considering the broader population in primary and secondary education and the significance of practical implementations, there is a need for a greater focus on this subject at these levels. Further research is needed to fully understand and enhance the relationship between social presence and learner satisfaction and persistence. Therefore, future research should continuously examine the complex interactions between social presence and other variables that contribute to learning satisfaction,and empirically test their direct relationship with learning persistence. Furthermore, there is a need to investigate the performance on social presence, learning satisfaction and persistence in various online and blended learning platforms, such as virtual reality and voice-enabled systems.

8   CONCLUSION

This review explores the relationship between social presence, learning satisfaction and learning persistence, utilising the PRISMA framework for a comprehensive analysis. This involved detailing data extraction, evaluating quality, defining selection criteria, and outlining search methods. Out of the documents gathered, 28 met the required standards, and the data extraction was limited to English-language

articles, reviews and conference papers. While a minority of studies found that the effect of social presence on learning satisfaction and persistence was less pronounced, the majority demonstrated a positive impact on these aspects. The combined reviews from the provided articles presented evidence that supported the conclusions of the methodological evaluation. Consequently, the review's objectives, specific constraints and potential future directions were debated.

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