

29

Presentation date: March, 2024
Date of acceptance: August, 2024
Publication date: September, 2024

THE CONCEPTIONS

AND DIMENSIONS OF SOCIAL PRESENCE: A SYSTEMATIC LITERATURE REVIEW

LAS CONCEPCIONES Y DIMENSIONES DE LA PRESENCIA SOCIAL: UNA REVISIÓN SISTEMÁTICA DE LA LITERATURA

Zhang Yue ^{1,2*}

E-mail: zhangyue@graduate.utm.my

ORCID: <https://orcid.org/0009-0003-5267-1041>

Hasnah Binti Mohamed ¹

E-mail: hasnah-m@utm.my

ORCID: <https://orcid.org/0000-0001-5119-6742>

¹ University Technology Malaysia, Johor Bahru, Malaysia.

² Modern Education Technology Centre, Hebei Institute of Mechanical and Electrical Technology, XingTai, China.

* Author for correspondence

Suggested citation (APA, seventh ed.)

Yue, Z. & Mohamed, H. B. (2024). The conceptions and dimensions of social presence: a systematic literature review. *Universidad y Sociedad*, 16(5), 277-287.

ABSTRACT

Online learning has risen to prominence due to numerous success stories, yet, the physical detachment inherent in online self-directed learning has raised concerns about student disengagement and isolation during the learning process. Social presence theory offers a distinct perspective, methods, and tools for the study of online learning. However, the understanding of social presence is ambiguous. This paper presents a thoughtful examination of existing literature, focusing on the conception and predicted dimensions of social presence. The study's findings suggest that the conception and dimensions of social presence vary in different periods and contexts. A structured examination of academic literature was carried out, revealing studies on social presence in education up until December 2023. The chosen papers were meticulously reviewed, and any redundancies were discarded. Adjusted protocols for conducting systematic reviews and meta-analyses were utilized during the literature exploration. The investigative team engaged in a detailed critique, shaping, and contemplation of the review's impact. Of the initially reviewed 4103 articles, only 28 met the designated parameters for refining and determining eligibility for inclusion or exclusion.

Keywords: Social presence, Conception, Dimensions, Measurement, Influencing factors, Online learning.

RESUMEN

La separación física es inherente al aprendizaje autodirigido en línea, lo que ha suscitado preocupación por la falta de compromiso y el aislamiento de los estudiantes durante el proceso de aprendizaje. La teoría de la presencia social ofrece una perspectiva, métodos y herramientas distintos para el estudio del aprendizaje en línea. Sin embargo, la comprensión de la presencia social es ambigua. Este artículo presenta un examen reflexivo de la literatura existente, centrándose en la concepción y las dimensiones previstas de la presencia social. Las conclusiones del estudio sugieren que la concepción y las dimensiones de la presencia social varían según las épocas y los contextos. Se llevó a cabo un examen estructurado de la literatura académica, que reveló estudios sobre la presencia social en la educación hasta diciembre de 2023. Los trabajos elegidos se revisaron meticulosamente y se descartaron las redundancias. Durante la exploración bibliográfica se utilizaron protocolos ajustados para la realización de revisiones sistemáticas y metaanálisis. El equipo de investigación realizó una crítica detallada, dando forma y contemplando el impacto de la revisión. De los 4103 artículos revisados inicialmente, sólo 28 cumplieron los parámetros designados para refinar y determinar la elegibilidad para su inclusión o exclusión.

Palabras clave: Presencia social, Concepción, Dimensiones, Medición, Factores influyentes, Aprendizaje en línea.

INTRODUCTION

The marriage of information technology with higher education has spawned diverse teaching and learning methodologies. As a vital means to deepen the integration of technology with traditional learning, online education has emerged as a significant tool. Online learning, with its role in advancing educational equality, is poised to set a new standard for enhancing learning effectiveness. Online learning, which involves the digital delivery of content and instruction enables remote access to educational resources, discussions, assignments, and interactions with educators and classmates. This mode of learning has seen substantial growth, particularly during the COVID-19 pandemic. Though online learning's beneficial effects on learning efficacy are recognized, it also presents unique challenges. Concerns over student disengagement and isolation due to the remote nature of learning have emerged, emphasizing the need to address isolation and retention.

Drawing on social cognitive psychology and constructivism, the role of social presence in knowledge internalization has gained recognition. The concept of social presence refers to the measure of consistent social-emotional cues recognized by communicators when interacting either through communication platforms or face-to-face discussions. Social presence theory offers a specialized outlook and tools for online learning research, making it an influential pedagogical concept in this field. Studies have shown the crucial role of social presence in determining aspects like satisfaction, perceived learning, and persistence (Gunawardena & Zittle, 1997; Zhang et al., 2024). It affects learning through its psychological influence on students. By improving social presence, it is possible to mitigate or avoid adverse experiences within online education settings.

The conception of social presence refers to the measure of consistent social-emotional cues recognized by communicators when interacting either through communication platforms or face-to-face discussions. Social presence consistently proves to be an essential element for prosperous experiences in online and blended learning contexts. It is typically characterized as the extent to which participants in an online environment perceive a sense of connection with each other.

The dimensions and influencing factors of social presence are paramount for devising strategies to enhance it. However, these dimensions and structures of social presence are primarily based on its definition. Different historical periods have derived various classic structures of social presence from its definition and measurement

tools. Although early classic structures and measurement methods of social presence are instructive for this study. However, existing tools are ambiguous and only applicable to specific media types (e.g., text-based online seminars or video-based conference systems). As information technology advances and educational environments transform, the elements and analytical frameworks for social presence are undergoing change. This study suggests a thorough examination and understanding of the components and determinants of social presence, drawing on relevant theories tailored to varied educational scenarios, to more effectively leverage the concept of social presence.

This analysis aims to consolidate existing knowledge on the subject by systematically collating and examining academic research related to the field, formulated to answer research questions through a methodical and clear approach. The objective is to explore the variations and factors influencing social presence across diverse periods and environments, with the research questions crafted following the steps of a systematic literature review (SLR):

1. How does the understanding of social presence transform in response to changes in educational environments and technological advancements?
2. How have the dimensions and influencing factors of social presence varied with the learning context and the introduction of information technology?

This document was crafted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, thoroughly addressing each research query encountered. The subsequent sections detail the methodology of the review and the structuring of this paper, maintaining fidelity to the original concepts while reducing redundancy.

MATERIALS AND METHODS

The Systematic Literature Review (SLR) embodies a detailed and structured approach for the investigation, evaluation, and synthesis of available scholarly works related to a specific theme or research question. It adheres to a predetermined protocol for the identification, selection, examination, and integration of pertinent academic papers. This process begins with the development of a strategic plan, defining the research aim and establishing criteria for inclusion and exclusion. A comprehensive search for relevant literature across various databases and platforms is then conducted. The located articles are evaluated based on predetermined relevance standards. Articles that meet these standards are then subjected to an in-depth analysis to assess their quality and relevance

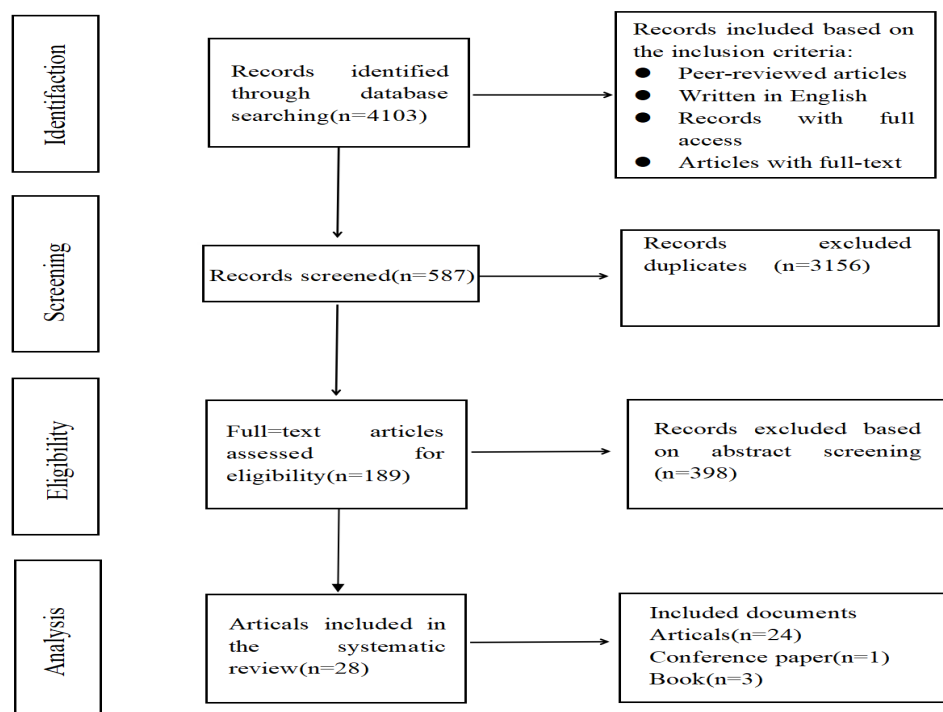
to the research goal. Ultimately, the information extracted from these articles is compiled and analyzed to draw conclusions and identify trends or gaps in the existing literature. Fundamentally, an SLR is an exhaustive and systematic research methodology that methodically searches, selects, appraises, and consolidates literature on a specified topic or research question, offering a comprehensive view of the subject and informing future research directions.

Meta-analysis serves as a quantitative amalgamation of diverse study results, addressing specific research problems. Utilizing an SLR to investigate trends and effects in a specific field is a recognized scholarly approach. In our research, we apply a customized PRISMA model to systematically unearth, assimilate, and elucidate comprehensive pertinent data from past studies, reflecting the current landscape of the subject. The insights from PRISMA aid in deepening and broadening the scope of article evaluation, while maintaining focus on the primary aims of the study. The ensuing representation provides a detailed perspective of the literature through its various phases. Figure 1 delineates the methodology used in our research.

Searching Strategies

A targeted search strategy was formulated to locate pertinent articles using the terms: “social presence” AND “conception” OR “social presence” AND “definition” OR “social presence” AND “dimension” OR “social presence” AND “factor” OR “social presence” AND “concept” OR “social presence” AND “component”. The search spanned three key databases: ScienceDirect, Scopus, and Web of Science, available at their respective websites: <https://www.sciencedirect.com/>, <https://www.scopus.com/>, and <https://www.webofscience.com/>. The search spanned articles, reviews, and conference proceedings available solely in English.

Fig 1. A PRISMA flowchart illustrates the document selection process at each screening phase.



Source: own elaboration.

Selection Standards

The objective of this research was to follow the evolution and shifts in the understanding of social presence along with its multiple dimensions. It scrutinized a comprehensive collection of 4130 documents spanning education, social sciences, and humanities, from the inception of the social presence notion up to December 2023. Implementing a worldwide perspective, this research sifted through international publications. After eliminating 3156 duplicates or irrelevant articles, 587 studies remained and were subjected to detailed examination. The criteria for including or excluding studies are detailed in Table 1, ensuring fidelity to the study's core objective while minimizing repetitiveness.

Assessment Quality

The analysis predominantly covered research articles and conference proceedings. The integrity of the review was maintained through a thorough verification of duplicates. The abstracts of the publications were carefully evaluated to ascertain the significance and applicability of the educational material for inclusion in the study. After an initial screening of 587 abstracts, 189 were deemed suitable for further review. A subsequent detailed examination of these 189 articles led to the selection of 27 pieces. This selection comprised 13 articles focused on the conceptual understanding of social presence, 19 on its dimensions and determinants, with 4 articles featuring in both segments, culminating in a curated collection of 28 articles for detailed analysis.

Table 1. Criteria for Selection and Rejection.

Criteria	Selected Criteria	Rejected Criteria
Type of Publication	Academic journals (research papers), conference papers, books	Review articles
Period	Due to December 2023	
Language of Publication	Only English	Works not in English
Field of Study	Social Sciences, Educational Sciences	Fields outside of Social Sciences and Education

Source: own elaboration.

Extraction of Data

The study's results, presented in English, encompassed findings from conferences, journal articles, and review papers up until December 2023. A total of 189 publications were scrutinized to determine the research objectives.

To make the review process more efficient, the research findings were ordered into two organized tables. Articles that fit the specific criteria were closely examined, with 30 of them being subjected to a detailed analysis. This section presents a thorough summary of these key points, leading into a comprehensive discussion on the implications of the findings. The research reviewed is succinctly captured in Table 2 and Table 3, offering a clear snapshot of the insights gained.

Table 2. The conception of social presence and representative scholars in different periods.

No.	Time	Conception Evolution Stage	Representative Scholars
1	1970s - 1995	Emergence and application to education, focusing on media per se	Short et al. (1976)
2	1995-21st	Focusing on communication mediums and the feelings of participants	Gunawardena (1995); Garrison et al. (1999); Gunawardena & Zittle (1997)
3	21st-Now	Focusing on psychological and emotional cognition	Tu & McIsaac (2002)

Source: own elaboration.

Table 3. The Measurements and Dimensions of Social Presence.

No.	Authors	Name of The Measurements	Dimensions and Influencing Factors	Validation
1	Short et al. (1976)	None	Dimensions: Not Dimensioned Questionnaire item count: 4 Evaluations were conducted using a seven-point Likert scale	Pilot testing (n = 12)
2	Gunawardena (1995)	Students' Personal Reactions to CMC	Dimensions: Not Dimensioned Questionnaire item count: 17 Evaluations were conducted using a five-point Likert scale	None
3	Gunawardena & Zittle (1997)	Social Presence Scale	Dimensions: Not-Dimensioned Questionnaire item count:14 Evaluations were conducted using a five-point Likert scale	The researchers linked the scale with a chosen six items from the Students' Personal Reactions to Computer-Mediated Communication (CMC) scale, ensuring a robust assessment of its applicability.
4	Rourke et al. (1999)	Social Presence Indicator	Dimensions: Structure comprising three main factors and their subcomponents: 1. Affective 2. Interactive 3. Cohesive Questionnaire item count:12 Evaluations were conducted using a five-point Likert scale	Authors selected transcripts from two graduate-level courses but didn't provide specific results of the reliability and validity testing
5	Garrison et al. (1999)	None	Dimensions: Structure comprising three main factors and their subcomponents: 1. Emotional expression 2. Open communication 3. Group cohesion	None
6	Biocca et al. (2001)	Networked Minds social presence questionnaire	Dimensions: Structure comprising three main factors and their subcomponents: 1. Co-presence 2. Psychological involvement 3. Behavior engagement Questionnaire item count:38 Evaluations were conducted using a seven-point Likert scale	Factor analysis alongside testing for concurrent validity involved 76 subjects
7	Tu & McIsaac (2002)	Social Presence and Privacy Questionnaire	Dimensions: five main factors but two of the factors are not the influencing factors of social presence: 1. Social context 2. Online communication 3. Interactivity 4. System Privacy 5. Feelings of privacy Questionnaire item count:27 Evaluations were conducted using a five-point Likert scale	Exploratory Factor Analysis (EFA) was conducted using both orthogonal and oblique rotations with a sample of 310
8	Picciano (2002)	None	Dimensions: unidimensional Questionnaire item count: 11 Evaluations were conducted using a seven-point Likert scale	

No.	Authors	Name of The Measurements	Dimensions and Influencing Factors	Validation
9	Kreijns & Kirschner (2004)	Social Presence Scale	Dimensions: Not Dimensioned Questionnaire item count:5 Evaluations were conducted using a five-point Likert scale	Pearson bi-variate correlation (2-tailed) analysis (n = 79)
10	Lin (2004)	Social Presence Questionnaire	Dimensions: Structure comprising four factors 1. Perception of assistance 2. Social comfort 3. Social navigation Questionnaire item count: 12 items Evaluations were conducted using a five-point Likert scale	Principal Component Analysis (PCA) applied varimax rotation for 15 participants
11	Kang et al. (2007)	Social Presence Scale	Dimensions: Structure comprising three factors 1. Co-presence 2. Influence 3. Cohesiveness Questionnaire item count: 19 Evaluations were conducted using a five-point Likert scale	EFA with oblivion rotation (n = 305)
12	So & Brush (2008)	None	Dimensions: Structure comprising three factors 1. Course structure 2. Emotional support 3. Communication medium	Interview content validation
13	Arbaugh et al. (2008)	Community of Inquiry (Col) survey	Dimensions: Not Dimensioned Questionnaire item count:9 Evaluations were conducted using a five-point Likert scale	Principal Component Analysis (PCA) utilized oblique rotation for 287 individuals
14	Kim (2011)	Social Presence Scale	Dimensions: Structure comprising four factors 1. Affective connectedness 2. Mutual attention and support 3. Sense of community 4. Open communication Questionnaire item count: 19 Evaluations were conducted using a five-point Likert scale	EFA using direct oblivion rotation was executed with 401 participants, Confirmatory Factor Analysis (CFA) was performed on 497 subjects, and testing for criterion validity involved 221 subjects
15	Wei et al. (2012)	None	Dimensions: Structure comprising three factors: 1. Co-presence 2. Intimacy 3. Immediacy Questionnaire item count: 12	CFA (n=522)
16	Sung & Mayer (2012)	Online Social Presence Questionnaire	Dimensions: Structure comprising five factors 1. Social respect 2. Social sharing 3. Open mind 4. Social identity 5. Intimacy Questionnaire item count: 19 items Evaluations were conducted using a five-point Likert scale	PCA employing varimax rotation and CFA were each conducted on a sample of 276

No.	Authors	Name of The Measurements	Dimensions and Influencing Factors	Validation
17	Whiteside (2015)	None	Dimensions: Structure comprising five factors 1. Affective Association 2. Community Cohesion 3. Instructor Involvement 4. Interaction Intensity 5. Knowledge and Experience Evaluations were conducted using - Case study approach for coding discussions - Instructor and student interviews, observation notes	None
18	Kreijns et al. (2020)	Social Presence Measure	Dimensions: Structure comprising two factors 1. Awareness of others 2. Proximity with others Questionnaire item count: 27 Evaluations were conducted using a five-point Likert scale	Rasch analysis (n = 82)
19	Norz et al. (2023)		Dimensions: Structure comprising four factors 1. The size of the individual egocentric student's network 2. Constraint 3. The number of forums in which students were active 4. The number of solved learning activities	Exploratory path analysis (n = 49)

Source: own elaboration.

RESULTS AND DISCUSSION

This concept carries substantial weight in the sphere of face-to-face and online education and was originally posited by Short et al. (1976), publication, "The Social Psychology of Telecommunications". It was initially described as an individual's prominence within group exchanges or interpersonal connections. Short et al. (1976), highlighted the influence of media as the primary determinant in the level of social presence experienced and conveyed by participants within mediated discourse. During the 1980s and 1990s, the theory of social presence was employed in researching the dehumanizing aspects of Computer-Mediated Communication (CMC), which was since CMC filtered out nonverbal messages and other relevant cues that were usually found in face-to-face communication. This phase of research focused on CMC in a business context, with researchers such as

Starting in the mid-1990s, the intervention of Internet technology enabled the development of online education, and researchers began to focus on online learning, applying social presence theory to the field of educational technology. The main researchers in this phase are Garrison et al. (1999). Gunawardena (1995), refined the definition, characterizing social presence as "the level to which an individual feels acknowledged as a real entity by others during technology-mediated interactions". Subsequently,

Garrison et al. (1999), and fellow scholars in the field of education in 1999, reframed this concept to encompass learners' ability to authentically project their socio-emotional characteristics onto a communal learning environment. According to Gunawardena & Zittle (1997), the perceived strength of a medium's interactivity and the learner's interpretation of such functionality determined the extent of social presence experienced during learning across various mediums. Before the 20th century, the comprehension of social presence was predominantly focused on communication mediums, with the notion that the characteristics of these mediums governed the strength of social presence.

As the 20th century unfolded, the understanding of social presence grew to place increasing emphasis on psychological and emotional cognition. Tu & McIsaac (2002), believed that social presence was the feeling, perception, and reaction that occurred when an individual connected with another subject in a text-based online discussion media environment. Social presence is a psychological perception of the individuality and subjectivity of being perceived together with others and communicating with each other under the medium environment. In this period, social presence was not only a subjective quality assessment of the use of media but also a psycho-phenomenological state that changed with the media, knowledge, communication content, environment, and social context.

The Dimensions and Main Influencing Factors of Social Presence

The concept of social presence has been defined and measured in countless ways by various scholars, with the dimensions, factors, and methods of measurement constantly changing based on the different definitions.

Early major measures used include the Social Presence Indicator (SPI) (Rourke et al., 1999), scales based on the COI model (Garrison et al., 1999), Networked Minds social presence questionnaire (Biocca et al., 2001), the Social Presence and Privacy Questionnaire (SPPQ) (Tu & McIsaac, 2002) and the Social Presence Scale (Kreijns & Kirschner, 2004). Rourke et al. (1999), used the content analysis of online discussions to measure social presence and proposed the SPI based on three domains: affective responses, interactive responses, and cohesive responses. Inspired by Gunawardena & Zittle (1997); and Garrison et al. (1999), proposed the COI model in 1999, which comprehensively considered and designed the exploration of the community. However, the social presence subscale of this model performed inconsistently in different validation studies (Arbaugh et al., 2008). Biocca et al. (2001), developed the Networked Minds social presence questionnaire to assess social existence in different backgrounds, helping to understand subjective experiences of the environment. Tu & McIsaac (2002), introduced the SPPQ, which, based on media attributes and human feelings, used CMC attitude measurement and privacy perception method to verify the scale. They eventually inferred three important factors affecting the perception of social existence: social context, online communication, and interactivity. Kreijns & Kirschner (2004), formulated the Social Presence Scale, a subjective questionnaire designed to assess perceived social presence within Computer-Supported Collaborative Learning (CSCL) settings. So & Brush (2008), identified the critical elements influencing learners' perception of social presence as the configuration of the course, provision of emotional support, and the chosen medium of communication, highlighting the value of active interaction, collaboration, and effective feedback systems in e-learning environments.

Since 2010, the three scales with higher citations are the Co-presence, Intimacy and Immediacy three-factor structure proposed by Wei et al.(2012), based on the initial definition of social presence, the Affective Association, Community Cohesion, Instructor Involvement, Interaction Intensity and Knowledge and Experience five-factor structure proposed by Whiteside (2015), and the Awareness of others and Proximity with others two-factor structure proposed by Kreijns et al.(2020), based on the theory of affordances from a psychological dimension. Utilizing

social network analysis, Norz et al. (2023), pinpointed the dimensions of an individual student's egocentric network, constraints, their participation across different forums, and the count of completed learning tasks as the key factors affecting their experience.

The evolution of the concept of social presence in learning environments has seen a shift from media-focused to learner-centered perspectives and largely centered on the period up to 2010. Initially, Short et al. (1976), considered social presence as a measure of individuals' prominence in media-based group interactions, emphasizing the medium's humanistic traits. This view challenged by Gunawardena & Zittle (1997), who perceived social presence from the learners' perspective, gauging their perception of their counterparts as "real people" in mediated communications. Further, someone introduced the idea of integrating social and emotional identities into the learning community, encapsulated in their community of inquiry model.

Tu & McIsaac (2002), associated social presence with emotional and perceptual reactions during text-based online interactions, endorsing a positive correlation with interactivity levels. Meanwhile, researchers extended social presence to a psychological perception of a shared existence in a medium environment, influenced by media, knowledge, content, environment, and social context. Despite these diverse perspectives, a unified understanding of social presence remains elusive, indicating the need for further research. Integrating these varied perspectives into a comprehensive model can provide a more holistic understanding applicable to diverse learning environments.

The interpretation of social presence evolves across different research phases and diverges across varied scholarly domains, with the conceptual dimensions and assessment techniques displaying distinct variations. Even though the definition of social presence may slightly fluctuate depending on the context, it broadly signifies the level at which one perceives and is recognized by others while employing information technology for interaction and learning.

The concept has evolved dramatically with the development of technology and its application in education. Additionally, scholars are delving into the complex relationship among social presence, online learning settings, Computer-Mediated Communication (CMC), and educational results, including student satisfaction. From its initial stages, "social presence" has developed into an influential notion within online and hybrid education frameworks. Innovations like flipped classrooms, mixed-learning

models, virtual reality, and technology-enhanced learning have introduced fresh avenues for investigating social presence. This groundwork is instrumental in facilitating ongoing and forthcoming scholarly inquiries.

Evidently, due to different numbers and natures of dimensions, and the inconsistent focus on the “authenticity” of others and oneself or its related factors, different social presence measurements pose hurdles to empirical research results comparison using these measurement methods. Short et al. (1976), believed that technology played a major role in shaping the sense of social presence. However, Gunawardena (1995), among others, held the opposite view, considering that the role of media attributes in the sense of social presence is negligible and emphasized the importance of social factors instead. This dichotomy marked the “technological determinism vs. social determinism” debate.

In the early development of the theory of social presence, technology was referred to as media. However, with the development of global information technology, the meaning of technology itself continues to expand and has long been distinguished from the concept of media. Today's technology not only refers to the transmission of media information but also includes the immersive design of the entire learning environment. In such an environment, we should reconsider the definition of technology. To address these complex issues, we need to meticulously research basic influencing factors and dimensions of social presence measurement, aiming to get more reliable and comparable results.

Drawing on the foundations of social learning theory and considering the Characteristics of the medium and user's perception, Tu & McIsaac (2002), pinpointed three principal factors affecting the perception of social presence: social context, online communication, and interactivity. The notion of social context encompasses several components such as task orientation, privacy concerns, discussion themes, the nature of relationships between communicators, and social dynamics, each playing a crucial role in shaping the intensity of social presence experienced. The concept of social context, which included task orientation, privacy, discussion topics, receiver relationships, and social processes, significantly impacted the level of social presence. Differences in social processes, environment, and goals were intrinsic components of the social context influencing social presence. Meanwhile, online communication requires sharing thoughts, information, or messages in digital space. Those facing difficulties in effective typing, reading, or writing can be considered “disadvantaged” in our digital society. Additionally, interactivity, defined as bilateral communication that could cause

immediate feedback, played a pivotal role in promoting social. In this research, the three components - “social context”, “online communication”, and “interactivity” are hypothesized to elucidate the essence of social presence.

The study by Kreijns & Kirschner (2004), made operational use of social affordance devices based on the principle of tele-proximity. This represented a computer-aided, artificially created proximity intended to foster group awareness, offering real-time insights into others' activities, irrespective of whether they are task-related or not. Social affordances devised on the premise of group awareness and closely tied to a set of communication channels are termed group awareness. These tools focused on encouraging spontaneous encounters and informal communications in various contexts. Group awareness widgets supplemented workspace awareness widgets that relay awareness about a person's task-related activities while engaged in a specific task, such as cursor positions in a shared editing tool. For asynchronous learning groups working across different time zones, social affordance devices also strive to minimize the time discrepancy inherent in such modes. Kreijns et al. (2020), confirmed two factors of social presence with a Rasch analysis, based on the definition of “the ‘realness’ of the communication”. In this research, from the user's perception, researchers have postulated two potential variables, namely ‘Awareness of Others’ and ‘Proximity with Others’, as pivotal constructs in understanding the essence of social presence.

Early studies of the social presence scale provide an important reference for our research on the structure and measurement of the social presence scale. However, with the continuous expansion of new technologies in the field of education, new influencing factors should be explored. We approach from the angles of technology environment, media characteristics, and user perception, specifying potential variables such as social context, online communication, interactivity, awareness of others, and proximity with others to describe social presence. We explore the interactions between these variables and delve deeply into the intricate relationship between the technical and psychological levels of social presence, enriching our understanding of this nuanced concept.

CONCLUSIONS

This analysis scrutinizes the notions and facets of social presence through the lens of the PRISMA framework, presenting an exhaustive summary. It entailed thorough data extraction, evaluation of quality, defining the criteria for selection, and summarizing the search approach. Out of the gathered documents, 28 fulfilled the necessary criteria,

with data extraction confined to articles, books, and conference papers in English.

Perceptions of social presence evolve alongside technological advancements, necessitating a comprehensive understanding of its significance and aspects within contemporary educational landscapes shaped by the merger of information technology and education. This knowledge is crucial for leveraging the concept to improve both learning spaces and instructional methods. The in-depth article review substantiates the outcomes of the methodological evaluation. Therefore, the aims of the review, its inherent constraints, and prospective research avenues are elaborated upon.

Limitations

Despite these insights, an examination of the methodologies employed in these studies indicates a diversity in research environments. Consequently, it might not be possible to extend these results to other student demographics or varied educational landscapes.

Typically, research focuses on a particular academic discipline, thus the impact of different academic fields warrants consideration. Presently, there exists a void in research concerning elementary and secondary education, as well as nascent educational technologies and their platforms. Moreover, there's a need to expand the scope of investigation to encompass additional novel contexts of incorporating information technology within educational frameworks.

Recommendations

This systematic review reveals the evolution of concepts and dimensions of social presence. Being at the centre of this area of research, relates to the academic understanding of the concept and the future direction of research. Further research will contribute to a fuller understanding and enrichment of the meaning of the concept of social presence.

There is also a need to explore the changes in social presence in various emerging pedagogical environments following the convergence of information technology and education, such as in different online and blended learning platforms (including virtual reality and voice systems). Through in-depth research on the mechanism of social presence on online learning, we can better guide the practice of online education and provide learners with a richer and more efficient learning experience.

REFERENCES

- Arbaugh, J. B., Cleveland-Innes, M., Diaz, S. R., Garrison, D. R., Ice, P., Richardson, J. C., & Swan, K. P. (2008). Developing a community of inquiry instrument: Testing a measure of the Community of Inquiry framework using a multi-institutional sample. *Internet and Higher Education*, 11(3-4), 133-136. <https://doi.org/10.1016/j.iheduc.2008.06.003>
- Biocca, F., Harms, C., & Gregg, J. (2014). The Networked Minds Measure of Social Presence: Pilot Test of the Factor Structure and Concurrent Validity Co-Presence. *East*, 21. https://www.researchgate.net/publication/200772411_The_Networked_Minds_Measure_of_Social_Presence_Pilot_Test_of_the_Factor_Structure_and_Concurrent_Validity
- Garrison, D. R., Anderson, T., & Archer, W. (1999). Critical Inquiry in a Text-Based Environment: Computer Conferencing in Higher Education. *The Internet and Higher Education*, 2(2-3), 87-105. [https://doi.org/10.1016/S1096-7516\(00\)00016-6](https://doi.org/10.1016/S1096-7516(00)00016-6)
- Gunawardena, C. N. (1995). Social presence theory and implications for interaction and collaborative learning in computer conferences. *International Journal of Educational Telecommunications*, 1(2), 147-166. <https://www.learntechlib.org/p/15156/>
- Gunawardena, C. N., & Zittle, F. J. (1997). Social presence as a predictor of satisfaction within a computer-mediated conferencing environment. *American Journal of Distance Education*, 11(3), 8-26. <https://doi.org/10.1080/08923649709526970>
- Kang, M., Park, J. U., & Shin, S. (2007, June). Developing a cognitive presence scale for measuring students' involvement during e-learning process. In *EdMedia+innovate learning* (pp. 2823-2828). Association for the Advancement of Computing in Education (AACE). <https://www.learntechlib.org/p/25774/>
- Kim, J. (2011). Developing an instrument to measure social presence in distance higher education. *British Journal of Educational Technology*, 42(5), 763-777. <https://doi.org/10.1111/j.1467-8535.2010.01107.x>
- Kreijns, K., & Kirschner, P. A. (2004). Group awareness widgets for enhancing social interaction in computer-supported collaborative learning environments: Design and implementation. *Proceedings - Frontiers in Education Conference*, 1, T3E14-T3E20. <https://doi.org/10.1109/fie.2002.1157973>
- Kreijns, K., Bijker, M., & Weidlich, J. (2020). A Rasch analysis approach to the development and validation of a social presence measure. In *Rasch Measurement: Applications in Quantitative Educational Research*. (pp. 197-221). https://doi.org/10.1007/978-981-15-1800-3_11

- Lin, G. Y. (2004). Social Presence Questionnaire of Online Collaborative Learning: Development and Validity. *Association for Educational Communications and Technology*. <https://eric.ed.gov/?id=ED484999>
- Norz, L. M., Dornauer, V., Hackl, W. O., & Ammenwerth, E. (2023). Measuring social presence in online-based learning: An exploratory path analysis using log data and social network analysis. *Internet and Higher Education*, 56. <https://doi.org/10.1016/j.iheduc.2022.100894>
- Picciano, A. G. (2002). Beyond student perceptions: Issues of interaction, presence, and performance in an online course. *Journal of Asynchronous Learning Network*, 6(1), 21–40. <https://doi.org/10.24059/olj.v6i1.1870>
- Rourke, L., Anderson, T., Garrison, R., & Archer, W. (1999). Assessing Social Presence in Asynchronous Text-based Computer Conferencing Computer Conferencing. *The Journal of Distance Education / Revue de l'education Distance*, 14(2), 50–71. http://cade.athabasca.ca/vol14.2/rourke_et_al.html
- Short, J., Williams, E., & Christie, B. (1976). The social psychology of telecommunications. In *The social psychology of telecommunications*. Wiley.
- So, H. J., & Brush, T. A. (2008). Student perceptions of collaborative learning, social presence and satisfaction in a blended learning environment: Relationships and critical factors. *Computers and Education*, 51(1), 318–336. <https://doi.org/10.1016/j.compedu.2007.05.009>
- Sung, E., & Mayer, R. E. (2012). Five facets of social presence in online distance education. *Computers in Human Behavior*, 28(5), 1738–1747. <https://doi.org/10.1016/j.chb.2012.04.014>
- Tu, C. H., & Mclsaac, M. (2002). The Relationship of Social Presence and Interaction in Online Classes. *American Journal of Distance Education*, 16(3), 131–150. https://doi.org/10.1207/S15389286AJDE1603_2
- Wei, C. W., Chen, N. S., & Kinshuk. (2012). A model for social presence in online classrooms. *Educational Technology Research and Development*, 60(3), 529–545. <https://doi.org/10.1007/s11423-012-9234-9>
- Whiteside, A. L. (2015). Introducing the social presence model to explore online and blended learning experiences. *Journal of Asynchronous Learning Network*, 19(2). <https://doi.org/10.24059/olj.v19i2.453>
- Zhang, Y., Mohamed, H. B., & Liu, D. (2024). A Systematic Literature Review on the Relationships between Social Presence, Learning Satisfaction and Persistence in Online Learning. *International Journal of Interactive Mobile Technologies (IJIM)*, 18(05), 44–61. <https://doi.org/10.3991/IJIM.V18I05.47799>