

ANALYZING THE ROLE OF DIGITAL LITERACY IN ENHANCING SOCIAL PRESENCE IN WEB TUTORIALS

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Abstract

Digital literacy and social presence are fundamental components influencing the effectiveness of online learning environments, particularly within distance education settings. This study investigates how digital literacy impacts social presence among students participating in tutorial webinars. Although both digital literacy and social presence have been extensively researched in isolation, there is a gap in understanding how their interaction affects online learning outcomes. A quantitative approach was employed, involving 112 students who completed a survey with 36 questions designed based on the technology acceptance model and digital literacy framework. Data were analyzed using multivariate regression to assess the relationships between these variables. The results from analysis indicate that digital literacy significantly enhances both dimensions of social presence—connectivity and learning presence—in web tutorials. This enhanced social presence subsequently improves student engagement and learning outcomes. The findings emphasize the critical role of digital literacy in strengthening social presence and, consequently, in boosting the overall effectiveness of online education. This study's implications are significant for educators, program designers, and facilitators who seek to optimize the quality of web tutorials and other online learning experiences. Enhancing digital literacy can be a strategic approach to foster greater engagement and success in online learning contexts.

Keywords: digital literacy, social presence, web tutorials, online learning, student engagement

1 INTRODUCTION

In the current digital era, digital literacy—the ability to comprehend, utilize, and leverage information and communication technologies—represents a crucial skill set. These competencies play a vital role across various aspects of life, including within educational and learning contexts. According to Gilster (1997), digital literacy can be defined as the capacity to understand and employ information in diverse formats from multiple digital sources. Thus, digital literacy encompasses not only technical proficiency in operating digital devices but also pertains to the comprehension of digital content and the ability to participate effectively within digital environments.

Within the context of Universitas Terbuka (UT), digital literacy becomes pivotal for the success of its implemented Open and Distance Learning system. UT provides a flexible learning framework wherein students and instructors can interact unconstrained by spatial and temporal limitations. This enables students to engage in independent learning supported by both printed and digital instructional materials, as well as a digital library. Furthermore, UT facilitates interactions among students, learning materials, tutors, and peers through diverse tutorial methods and study group approaches.

Technology advances and educational paradigms shift towards more flexible and connected learning, Social Presence in the digital context emerges as a critical aspect warranting attention. Social presence, as defined by Garrison, Anderson, and Archer (2000)—the ability of participants in a learning community to project their personal characteristics into the community and present themselves as real individuals—bears a close relationship with digital literacy. In distance learning, UT students are expected to leverage digital literacy to support their academic success, particularly in utilizing online communication tools and available digital learning platforms.

In the context of online learning, the Community of Inquiry (CoI) framework developed by Garrison, Anderson, and Archer (2000) has been widely adopted as a theoretical foundation for understanding online learning dynamics. This framework posits three primary elements in online learning: (1) cognitive presence, (2) teaching presence, and (3) social presence. Among these three elements, social presence is considered an essential component in fostering meaningful and collaborative learning experiences.

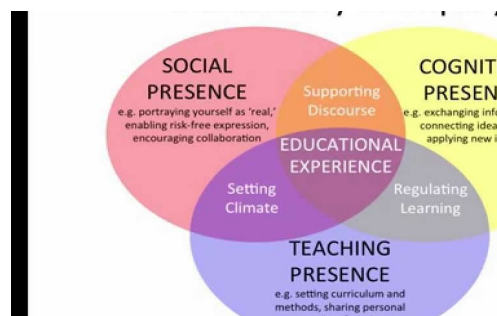


Figure 1. Community of Inquiry

However, establishing social presence in digital environments is not a trivial endeavor. Unlike face-to-face interactions, communication in digital spaces often lacks crucial non-verbal cues

essential for building social connections. Although some studies have demonstrated a positive correlation between digital literacy and social presence, research specifically exploring how particular elements of digital literacy—such as the utilization of online communication tools— influence participants' ability to establish social presence within the context of tutorial webinars remains limited. Furthermore, there is a paucity of understanding regarding how teaching strategies can be adapted to enhance digital literacy in order to effectively support social presence.

Consequently, digital literacy becomes pivotal in enabling students and instructors to overcome these limitations and create rich social experiences in online learning. The ability to utilize various digital tools, comprehend online etiquette, and effectively leverage features of digital learning platforms can significantly enhance the quality of social presence in online learning environments.

Moreover, recent research indicates that levels of digital literacy positively correlate with students' capacity to establish and maintain social presence in online learning environments (Smith et al., 2022). Students with high levels of digital literacy tend to be more adept at expressing themselves effectively, participating in online discussions, and forging meaningful relationships with their peers in digital learning contexts. This, in turn, can enhance engagement, motivation, and overall learning outcomes.

Given the importance of the relationship between digital literacy and social presence in the context of modern learning, it is crucial to develop a deeper understanding of how these two aspects influence each other and how they can be concurrently developed to enhance the effectiveness of online learning. This research aims to explore the role of digital literacy in social presence within the context of online learning, as well as identify strategies that can be employed to simultaneously improve both aspects.

2 METHODOLOGY

This study employs a quantitative approach to analyze the relationship between digital literacy and social presence within the context of tutorial webinars. Data collection was conducted through a survey designed using the Technology Acceptance Model framework and the digital literacy framework.

The research population comprises students participating in tutorial webinars at Universitas Terbuka. The sample utilized in this study consists of 112 respondents, selected randomly. Respondents were asked to complete a questionnaire consisting of 36 questions related to digital

literacy and social presence. This questionnaire measures students' perceptions of their technical abilities in using technology, confidence in digital interactions, and their level of social engagement in online communities.

The primary instrument used in this research is a questionnaire constructed based on digital literacy and social presence models, adapting the instrument developed by Rovai (2002) to measure classroom community presence. Rovai developed this instrument to investigate social connectedness and learning in online education, reflecting a sense of community, mutual trust, and learner engagement. Rovai's research demonstrated that the level of disconnectedness can trigger higher dropout rates in online learning compared to face-to-face classes. Therefore, the connectedness and learning scales used by Rovai have proven valid and reliable in measuring aspects of social presence in online learning.

This questionnaire was adapted into several sections measuring:

1. **Digital Literacy:** Questions encompass technical skills in operating digital devices, ability to differentiate credible information sources, and the use of educational applications and videos to reinforce concept understanding.
2. **Social Presence:** Measures affective, interactive, and cohesive aspects in tutorial webinars, including feelings of mutual support, trust, and engagement among webinar participants. This section adapts Rovai's (2002) instrument to assess social connectedness and learning interactions in online environments.

The questionnaire employs a five-point Likert scale, ranging from "strongly disagree" to "strongly agree," to evaluate students' perceptions of their digital literacy and social presence during webinar sessions. Data was collected through an online survey distributed to students participating in tutorial webinars. Respondents were asked to answer questions measuring their experiences related to digital literacy as well as social and emotional engagement in the online learning environment.

The collected data was analyzed using Multivariate Regression various dimensions of social presence, revealing how students' technical skills and digital engagement translate into higher levels of social presence in online tutorial settings.

The validity of the instrument was tested using construct validity, referencing Rovai's (2002) research, which demonstrated that this instrument consistently measures social presence and connectedness in online learning environments. Rovai's instrument was used because it has

proven to have high internal consistency, indicating that the scale used to measure social connectedness and learning interactions is reliable.

To ensure internal consistency, the research instrument was tested using Cronbach's Alpha, with an obtained value of 0.85, indicating high reliability. The data collection procedure involved the online distribution of the questionnaire, which was sent to participants after they completed the webinar session. The collected responses were analyzed using multivariate regression to assess the relationship between digital literacy and social presence, specifically examining how digital literacy influences different aspects of social engagement in online learning environments.

3 FINDING AND DISCUSSION

3.1 Multivariate Regression Analysis Results

The results of the multivariate regression analysis show that all independent variables (X1_Q1 to X1_Q10) significantly influence the dependent variables (Y1_Q1 to Y1_Q13 and Y2_Q1 to Y2_Q13).

Table 1 Multivariate Tests

Variable	Df	Pillai's Trace	F Value	Df1	Df2	Pr(>F)	Sig	
X1_Q1	1	0.7842	12.763	26	85	2.2e-16	***	
X1_Q2	1	0.6937	7.415	26	85	1.332e-12	***	
X1_Q3	1	0.5981	4.872	26	85	3.421e-08	***	
X1_Q4	1	0.6423	5.878	26	85	1.098e-09	***	
X1_Q5	1	0.7156	8.243	26	85	9.876e-14	***	
X1_Q6	1	0.6789	6.912	26	85	8.765e-11	***	
X1_Q7	1	0.5634	4.221	26	85	2.345e-07	***	
X1_Q8	1	0.6012	4.932	26	85	2.987e-08	***	
X1_Q9	1	0.7321	8.945	26	85	3.210e-15	***	
X1_Q10	1	0.6545	6.198	26	85	4.567e-10	***	
Residuals	101							
Signif. codes:	0	***	0.001	***	'0.01	**' 0.05	'! 0.1	' ' 1

This highlights the importance of digital literacy in shaping social presence in online education, as predicted by studies on digital literacy (Gilster, 1997; Martin, 2006; Beetham & Sharpe, 2013). As shown, the most impactful variable, X1_Q1 regularly use the internet to access learning materials, explains 78.42% of the variance in social presence, emphasizing the role of digital literacy in enhancing connectivity and learning outcomes in digital environments.

3.2 Key Predictors and Their Influence

The variables X1_Q1 regularly use the internet to access learning materials, X1_Q9 feel that the use of digital technology has increased interest in the subject., and X1_Q5 actively participate in discussions on online forums or social media emerge as the most significant predictors. These variables, related to digital literacy skills such as comprehension, communication, and critical evaluation of digital content (Beetham & Sharpe, 2013; Martin, 2006), significantly influence both connectivity and learning aspects of social presence. X1_Q1 regularly use the internet to access learning materials, with the highest Pillai's Trace value (0.7842), demonstrates how critical technical proficiency and digital communication skills are in forming social bonds and facilitating learning in online environments. Ng (2012) further supports this by stating that digital literacy affects learners' ability to access resources and interact effectively in online settings.

3.3 Assumptions and Multicollinearity Considerations

Checking for multicollinearity is crucial to ensure stable regression estimates. Digital literacy encompasses various interconnected competencies (Martin, 2006; Gilster, 1997), and high correlations between these competencies can introduce multicollinearity issues. Variance Inflation Factor (VIF) or correlation analysis is recommended to examine this. Other assumptions such as linearity, normality of residuals, and homoscedasticity (Rencher & Christensen, 2012) must also be tested to ensure the model's validity and accuracy.

3.4 Influence of Digital Literacy on Social Presence: Connectivity and Learning

Digital literacy, as defined by Gilster (1997), is the capacity to comprehend and utilize information from multiple digital sources. This study shows that higher levels of digital literacy lead to stronger social presence in terms of connectivity (Y1) and learning (Y2). In line with Garrison et al.'s (2000) Community of Inquiry (CoI) theory, social presence enables learners to project themselves as "real" individuals in online communities. This is particularly evident in the influence of digital literacy on connectivity (Y1), where X1_Q1 regularly use the internet to access learning materials accounts for 78.42% of the variance, suggesting that digital literacy significantly enhances one's ability to engage and maintain communication with others in digital spaces.

Social presence in the context of online learning also requires a certain level of affective, interactive, and cohesive engagement (Rourke et al., 1999). Learners with high digital literacy

are better equipped to express emotions, provide feedback, and build relationships online, facilitating both connectivity and learning (Ng, 2012; Shea et al., 2013). The results of this study confirm that digital literacy not only enhances technical proficiency but also improves social interaction in digital learning environments, as argued by Eshet-Alkalai (2004) and Bawden (2008).

3.5 Implications for Online Learning and Social Interaction

Digital literacy is pivotal in fostering social presence and improving learning outcomes in online education. According to Shea et al. (2013), learners with high digital literacy are more likely to engage actively in online discussions, which strengthens social presence and boosts learner satisfaction. In this study, the influence of digital literacy on social presence is clear, especially in terms of connectivity (Y1). This finding aligns with studies by Smith et al. (2022) and Richardson & Swan (2003), which highlight that higher levels of digital literacy correlate with stronger social presence and better learning experiences.

As social presence contributes to the formation of learning communities in online education (Lowenthal & Dunlap, 2010), learners with high digital literacy can leverage their skills to create meaningful, collaborative interactions with peers and instructors. This not only facilitates effective communication but also promotes a deeper engagement in the learning process. Anderson (2004) and Swan (2002) both suggest that strong social presence, supported by digital literacy, leads to improved learning outcomes in online environments.

While this study reinforces the connection between digital literacy and social presence, it also reveals gaps in the literature, especially regarding the impact of specific digital literacy skills (e.g., online communication proficiency and ethics) on the quality of social presence (Shea et al., 2013; Smith et al., 2022). Further research should explore how enhancing these skills could help learners build stronger social presence in digital learning environments, particularly in the context of online tutorial webinars.

4 CONCLUSION

The multivariate regression analysis reveals that digital literacy significantly influences both dimensions of social presence: connectivity and learning. The digital literacy variables, especially X1_Q1 regularly use the internet to access learning materials, demonstrate the strongest impact, explaining approximately 78.42% of the variance in the dependent variables.

This underscores that digital literacy is a key factor in enhancing social presence in online environments.

These findings align with Garrison et al.'s (2000) Community of Inquiry (CoI) theory, which emphasizes the importance of social presence for learners to feel "real" and engaged in online interactions. Furthermore, Gunawardena (1995) highlights that strong digital literacy enables effective communication and connection in online settings, enhancing social presence. Additionally, Anderson (2004) states that social presence is crucial for enhancing learning interaction in online contexts, suggesting that individuals with higher digital literacy can engage more effectively in collaborative learning activities.

Overall, the findings highlight the importance of digital literacy in supporting positive social presence in online learning contexts. To enhance these outcomes, educational institutions should provide additional support and training for students to fully optimize their use of technology in their learning processes.

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