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Social Presence and Satisfaction in Online Learning between Indonesian and Malaysian Students

Eka Putra
Institut Agama Islam Negeri Kerinci
E-mail: eka003455@gmail.com

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Abstract
Online learning is becoming increasingly popular in education environment. However, despite its popularity, some challenges still need to be experienced by students in adapting to this system. This research aims to describe the social presence and satisfaction of students in online learning, as well as examine the relationship between social presence and student satisfaction. A cross-sectional online study was conducted, involving 508 Indonesian and Malaysian postgraduate students from August 5 to October 2, 2023. Participants completed the social presence and student satisfaction scale developed by Gunawardena and Zittle. Data analysis techniques included descriptive statistics, the Man-Whitney test, the Kruskal-Wallis test, and Spearman's Rank-Order Correlation. The social presence and student satisfaction were categorized as good, as there were no items with scores below average. Univariate analysis indicated that the online learning experience and the quality of the network in the place of residence were determining factors for the differences between the variables, while other characteristics, including the country (Indonesia and Malaysia), showed no significant differences. Correlation analysis indicated a positive relationship between social presence and student satisfaction. These findings provide insight into the idea that the higher social presence of students during online learning will lead to increased learning satisfaction. Universities should consider revising their curriculum to be more ICT-friendly, helping students become familiar with using the platform. Educational policies should also focus on training and developing educators to effectively implement online learning. Additionally, government support is crucial in realizing high-quality online learning.

Keywords: social presence, satisfaction, online learning, educational policies

INTRODUCTION

The COVID-19 pandemic that has affected the entire world from 2019 to 2022 has had a significant impact on the learning process (Sujadi et al., 2020a; Sujadi et al., 2020b). Even until now, many universities still maintain online learning systems in their curricula. Online learning has shown significant growth, with improvements in bandwidth, interactive software, and instructor availability, although there is still ongoing debate about its use (Lancaster et al., 2017). This learning environment offers a unique educational domain in terms of interaction, participation, and collaboration (Bandias & Gilding, 2012). A study revealed that the main advantage of implementing online learning is the flexibility it provides for students to learn in various locations and at their own pace and (Luaran et al., 2014). Various applications are used, including proprietary systems like blackboards and open-source platforms like Sakai and Moodle (Henninger & Neal, 2012; Sumardi & Muamaroh, 2020). The study further emphasizes the benefits of online learning in terms of flexibility and accessibility (Luaran et al., 2014).

However, there are several challenges associated with the application of online learning. A study categorized these challenges into three areas: student-related issues, instructor-related issues, and content-related issues. Student-related issues encompass expectations, readiness, identity, and participation in online learning. Instructor-related issues include faculty roles, transitioning from face-to-face to online instruction, time management, and teaching styles. Content-related issues involve instructor involvement in content development, multimedia integration, learning strategies, and curriculum development (Kebritchi et al., 2017). Professionals providing online lectures are under pressure to adapt to user needs and explore new directions and approaches (Judd & Marcum, 2017; Meditamar et al., 2022). Educators familiar with Information and Communication Technology (ICT) find it easier to implement a Learning Management System (LMS), while those accustomed to traditional teaching strategies may struggle to facilitate learning through this system. Some educators, especially those in rural areas with limited internet access, may not be familiar with the online environment (Hadiyanto et al., 2013; Swan, 2017). A study reviews the challenges and trends of online education across five regions (North America, Europe, South America, Asia, Asia-Pacific, and Africa) and highlights that although online learning continues to grow, certain areas are not yet ready for online education, particularly due to low public appreciation (Palvia et al., 2018).

From the students' perspective, many students participating in remote learning programs express that the burden of online classes is greater compared to regular classes. Furthermore, there are still numerous students who lack devices and unlimited internet access to fully engage in online classes (Angdhiri, 2020; Jalli, 2020). They encounter various challenges related to effective learning practices and communication patterns (Palvia et al., 2018). A study revealed that 40% of students faced technology accessibility issues, and only 26.4% of participants were adequately prepared for e-learning system usage (Shahmoradi et al., 2018).

The challenges in implementing online learning can impact students' satisfaction with their learning experience. Student satisfaction is a crucial factor for the success of online learning. It can be defined as a short-term attitude resulting from an evaluation of the educational experience, services, and facilities received (Weerasinghe et al., 2017). Learning satisfaction serves as an evaluation tool for educators to assess the appropriateness of their teaching methods. Additionally, students' perspectives provide valuable insights for course designers, educators, and administrators to identify areas that

require improvement. Student satisfaction is a multidimensional process influenced by various factors, including the quality of e-learning services (Pham et al., 2019), student-instructor interaction, instructor performance, and course evaluation (Ali et al., 2012), as well as personal and institutional factors (Appleton-Knapp & Krentler, 2006). Personal factors encompass age, gender, occupation, learning style, and values, while institutional factors include teaching quality, accuracy of feedback from instructors, clarity of expectations, and teaching style. Furthermore, social presence is a predictor of learning satisfaction (Alsadoon, 2018; Cobb, 2011; Gunawardena & Zittle, 1997; Park & Kim, 2020; J. C. Richardson et al., 2017; Strong et al., 2012; Zhan & Mei, 2013).

Social presence is a frequently researched topic, particularly for those interested in the field of online learning. It plays a crucial role in enhancing the effectiveness of online learning (Tu, 2002). Initially, social presence was defined as the degree of salience of the other person in the interaction and the resulting salience of interpersonal relationships (Short, Williams, & Christie, 1976). While many researchers have adopted this definition, they have not provided a clear conceptualization of the components of social presence and the factors that influence it (Tu, 2002). Another perspective suggests that social presence refers to the extent to which a person feels the presence of other participants in communication (Calefato & Lanubile, 2010). A study explains that social presence consists of four dimensions: social context, online communication, interactivity, system privacy, and feelings of privacy (Tu, 2002). Gunawardena used students' social comfort levels while using Computer-Mediated Conferencing (CMC) as an indicator of measuring social awareness (Gunawardena & Zittle, 1997). Social presence in communication media contributes to the level of intimacy, which is influenced by factors such as physical distance, eye contact, and smiles (Short et al., 1976).

This study aims to describe social presence and student satisfaction in the context of online learning, as well as examine the relationship between social presence and student satisfaction. Additionally, the study compares social presence and satisfaction among Indonesian and Malaysian students, considering other demographic characteristics. As previously explained, student behavior in online lectures, including social presence and satisfaction, is influenced by the support provided by the learning environment. Each country may implement different policies and provide varying facilities for online learning. Although some previous studies have investigated the relationship between social presence and learning satisfaction, research conducted in the post-pandemic era is lacking. Hence, this study aims to contribute to the improvement of the quality of online learning.

METHOD

The researchers used a cross-sectional online survey to increase the number of respondents from Indonesia and Malaysia participating in this study. Data collection took place for approximately three months, from August to October 2023. A total of 508 postgraduate students from Indonesia and Malaysia participated in the research. The questionnaire link was distributed through WhatsApp and Telegram. Upon receiving and clicking the link, participants were presented with a series of questions, starting with general identity (anonymous), social presence scale, and student satisfaction scale. Participants completed the scale based on criteria related to various demographic characteristics. The demographic and special characteristics of the participants are presented in Table 1.

Table 1. The Demographic and Special Participant Characteristics

Variable	**Category**	**Frequency**	**Percentage**
Country	Indonesia	306	60.24
	Malaysia	202	39.76
Gender	Male	189	37.20
	Female	319	62.80
Daily internet usage time	1-3 hours	35	6.89
	4-6 hours	143	28.15
	7-9 hours	79	15.55
	> 9 hours	115	22.64
Place of residence	Urban	186	36.61
	Rural	322	63.39
Experience in attending online lectures	Always	81	15.94
	Rarely	316	62.20
	Never	111	21.85
Quality of internet services	Good	149	29.33
	Moderate	272	53.54
	Bad	87	17.13

There are two scales used in this study. The social presence scale, developed by Gunawerdana, was employed to measure social presence in online lectures. This scale consists of 14 items that capture the concept of "immediacy." Participants were asked to select one of the five options provided, ranging from strongly agree (5) to strongly disagree (1). The content validity of the social presence scale was assessed by Gunawardena & Zittle (Gunawardena & Zittle, 1997) through bivariate correlational analysis, comparing it with six bi-polar social indicators used by Short et al. to measure the concept of "closeness" in mediated communication (Short et al., 1976). Gunawardena and Zittle reported correlation coefficients ranging from .52 to .87 between the bi-polar items and the social presence scale. Furthermore, reliability testing using Cronbach's Alpha yielded a score of .88 (Gunawardena & Zittle, 1997).

In addition, this study utilized a satisfaction scale developed by Gunawardena & Zittle (Gunawardena & Zittle, 1997). This scale comprises 10 items assessed on a Likert scale ranging from 1 to 5, with options including strongly agree (5) to strongly disagree (1). The reliability test Cronbach's Alpha on this instrument yielded a score of .87. However, for the purpose of this study, a modification was made to reduce the number of items on the satisfaction scale from 10 to 9, after obtaining permission from Dr. Gunawardena to use both scales.

All data were analyzed using SPSS software. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were employed to describe participants' social presence and satisfaction in general. This analysis technique was also utilized to examine the variations in the measured variables based on demographic and other special characteristics, such as countries, daily internet usage time, experience in online learning, gender, place of residence, and quality of internet services. To compare participants' social presence and satisfaction across these characteristics, the Mann-Whitney Test and Kruskal-Wallis technique were applied. Additionally, Spearman's Rank-Order Correlation was used to determine the relationship between social presence and students' satisfaction.

FINDINGS AND DISCUSSION

Findings

The social attendance scale comprises 14 items (refer to Table 2). The respondents' average scores ranged from 3.24 to 3.58. The items that received the highest scores were item number 8, "The instructors/moderators facilitated discussion in the course" (M = 3.58, SD = .91); item number 7, "The instructors/moderators created a feeling of an online community" (M = 3.55, SD = .90); item number 9, "Discussion using computer-mediated instruction tends to be more impersonal than face-to-face discussions" (M = 3.54, SD = .93); and item number 1, "Messages in the online course were impersonal" (M = 3.51, SD = .87). On the other hand, the item with the lowest score was item number 3, "I felt comfortable conversing through this text-based medium" (M = 3.24, SD = 1.06).

Table 2. Descriptive Statistics for Students' Social Presence (N = 508)

Items#	Text	N	M	SD
1	Message in the online course were impersonal	508	3.51	.87
2	Computer-mediated communication is an excellent medium for social interactions	508	3.28	1.03
3	I felt comfortable conversing through this text-based medium	508	3.24	1.06
4	I felt comfortable introducing myself in the online course	508	3.28	1.03
5	The introduction enabled me to form a sense of online community	508	3.50	.92
6	I felt comfortable participating in the course discussions	508	3.43	1.01
7	The instructors/moderators created a feeling on an online community	508	3.55	.90
8	The instructors/moderators facilitated discussion in course	508	3.58	.91
9	Discussion using the medium of computer-mediated instruction tend to be more impersonal than face- to-face discussions	508	3.54	.93
10	Computer-mediated discussions are more impersonal than audio teleconference discussions	508	3.50	.88
11	Computer-mediated discussions are more impersonal than video teleconference discussions	508	3.43	.87
12	I felt comfortable interacting with other participants in the online course	508	3.35	.95
13	I felt that my point of view was acknowledged by the other participants in the course	508	3.34	.88
14	I was able to form distinct individual impressions of some course participants even though we communicated only via a text-based medium	508	3.43	.88

Scale: l=Strongly Disagree, 2=Disagree, 3=Uncertain, 4=Agree, 5=Strongly Agree

Next, students' satisfaction was assessed using 9 items (refer to Table 3). The scores for this variable ranged from 3.48 to 3.94. The highest scores were obtained in item number 4, "I learned to value other points of view" (M = 3.94, SD = .86); item number 9, "I put a great deal of effort into learning the computer-mediated communication system to participate in the online course" (M = 3.77, SD = .91); and items number 1 (M = 3.67, SD = .88) and 6 (M = 3.67, SD = .93) received the same score. The item with the lowest score was number 5, "As a result of my experience with the online course, I would like to participate in another online course in the future" (M = 3.48, SD = 1.04).

Table 3. Descriptive Statistics for Students' Satisfaction (N = 508)

Items#	Text	N	M	SD
1	I was able to learn through the medium of Computer-mediated communication	508	3.67	.88
2	I was able to learn from the online discussions	508	3.58	.91
3	I was stimulated to do additional reading or research on topics discussed in the online course	508	3.54	.99
4	I learned to value other points of view	508	3.94	.86
5	As a result of my experience with the online course, I would like to participate in another online course in the future	508	3.48	1.04
6	The online course was a useful learning experience	508	3.67	.93
7	As a result of my participation in the online course, I made acquaintances electronically in other parts of the country/world	508	3.53	.96
8	The diversity of topics in the online course prompted me to participate in the discussions	508	3.65	.90
9	I put a great deal of effort to learn the computer-mediated communication system to participate in the online course	508	3.77	.91

Scale: l=Strongly Disagree, 2=Disagree, 3=Uncertain, 4=Agree, 5=Strongly Agree

Table 4 presents the variations in social presence across different factors, including countries, gender, daily internet usage, place of residence, experience in attending online lectures, and internet service quality. The analysis reveals the following findings: 1) There is no significant difference in social presence among countries ($P > .05$); however, Indonesian students exhibit a higher mean social presence compared to Malaysian students. 2) Gender does not significantly affect social presence ($P > .05$), although females tend to have higher scores than males. 3) The amount of time spent accessing the internet per day does not significantly impact social presence ($P > .05$). Students who use the internet for 1-3 hours daily tend to have higher scores than other categories. 4) Place of residence does not significantly influence social presence ($P > .05$), but students residing in urban areas tend to have slightly higher scores than those in rural areas. 5) There are significant differences in social presence based on experience attending online lectures ($P < .05$). Individuals with experience attending online lectures have higher scores compared to students without such experience. 6) Social presence varies significantly based on the quality of internet services available ($P < .05$). Students

in well-serviced areas tend to have higher scores than those in areas with poor signal quality.

Table 4. Univariate Analysis of Social Presence

Variables	Total (%)	Mean (SD)	Statistics	P
Country			-1.419[a]	.156
Indonesia	306 (60.24)	47.42 (8.40)		
Malaysia	202 (39.76)	43.57 (10.23)		
Gender			-.101[a]	.920
Male	189 (37.20)	47.77 (8.88)		
Female	319 (62.80)	48.02 (7.97)		
Time Spent for Accessing Internet in a Day			2.318[b]	.509
1-3 hours	35 (6.89)	48.49 (8.09)		
4-6 hours	143 (28.15)	48.31 (8.74)		
7-9 hours	79 (15.55)	47.14 (8.62)		
> 9 hours	115 (22.64)	47.81 (7.65)		
Place of Residence			-.215[a]	.830
Urban	186 (36.61)	48.45 (8.85)		
Rural	322 (63.39)	47.62 (7.99)		
Experience in Following Online Class			14.160[b]	.001
Always	81 (15.94)	48.69 (9.21)		
Rarely	316 (62.20)	48.70 (7.89)		
Never	111 (21.85)	45.16 (8.29)		
Quality of Internet Services			28.203[b]	.000
Good	149 (29.33)	50.96 (7.58)		
Moderate	272 (53.54)	46.93 (8.01)		
Bad	87 (17.13)	45.84 (9.10)		

a Mann-Whitney test
b Kruskal-Wallis test

This study also presents the Univariate Analysis of Students' Satisfaction (refer to Table 5), with the following details: 1) There is no significant difference in students' satisfaction between Indonesian and Malaysian students (P > .05). However, Malaysian students have slightly higher scores compared to Indonesian students. 2) There is no significant difference in satisfaction between male and female students (P > .05). Females obtain higher scores than males. 3) The amount of time spent by students to access the internet per day does not significantly affect satisfaction (P > .05). 4) There is no significant difference in satisfaction between students living in urban and rural areas (P > .05). 5) Students' satisfaction does not significantly vary based on their experience attending online lectures (P > .05). 6) The quality of available internet services also contributes to differences in students' satisfaction (P < .05). Students residing in areas with good signal coverage have higher scores compared to those in areas with limited signal access.

Table 5. Univariate Analysis of Students' Satisfaction

Variables	Total (%)	Mean (SD)	Statistics	P
Country			-.279[a]	.780
Indonesia	306 (60.24)	32.79 (5.42)		
Malaysia	202 (39.76)	32.89 (6.38)		

Gender			-1.363[a]	.173
Male	189 (37.20)	32.40 (5.82)		
Female	319 (62.80)	33.08 (5.81)		
Time Spent for Accessing Internet in a Day			2.753[b]	.431
1-3 hours	35 (6.89)	33.89 (5.70)		
4-6 hours	143 (28.15)	32.81 (5.81)		
7-9 hours	79 (15.55)	32.80 (5.55)		
> 9 hours	115 (22.64)	32.49 (6.04)		
Place of Residence			-.825[a]	.409
Urban	186 (36.61)	33.02 (6.05)		
Rural	322 (63.39)	32.72 (5.68)		
Experience in Following Online Class			5.757[b]	.056
Always	81 (15.94)	32.52 (6.30)		
Rarely	316 (62.20)	33.30 (5.82)		
Never Never	111 (21.85)	31.72 (5.30)		
Quality of Internet Services			28.442[a]	.000
Good	149 (29.33)	34.74 (5.59)		
Moderate	272 (53.54)	32.33 (5.43)		
Bad	87 (17.13)	31.13 (6.51)		

a Mann-Whitney test
b Kruskal-Wallis test

Next, Table 6 presents the correlation between social presence and students' satisfaction in relation to online lectures. The analysis reveals a significant positive correlation between social presence and students' satisfaction ($r = .618$, $P < 0.000$). Therefore, it can be concluded that as social presence increases, students' satisfaction following online lectures also increases.

Table 6. The Results of Data Analysis Using the Spearman's Rank-Order Correlation

Variable	**N**	**R**	**P**
The correlation between social presence and students' satisfaction	508	.618	.000

r Correlation coefficient

Discussion

The findings indicate that social presence and students' satisfaction in attending online lectures were rated as good. Based on the average score per item, no student scored below three for both variables. This suggests that despite facing numerous challenges, students are making efforts to adapt to the online learning environment. This is in line with findings that indicate that post-COVID-19, students were actually ready to engage in online learning. They were also satisfied with the implemented learning methods (Redaputri et al., 2021). The univariate analysis of social presence and students' satisfaction revealed no significant differences between the variables based on country (Indonesia and Malaysia), gender, daily internet usage, and place of residence (urban and rural). However, differences were observed in terms of experience attending online lectures and the quality of the internet network at students' residences.

While online learning classes are still relatively unfamiliar in many universities in Indonesia and Malaysia, some universities had already implemented online lectures

before the COVID-19 pandemic. Notably, programs such as Open University of Malaysia and Universitas Terbuka in Indonesia offered comprehensive online lecture systems (Open University Malaysia, 2020; Universitas Terbuka, 2019). Although online lectures were not widely adopted, the use of ICT in learning has increased in both Indonesia and Malaysia (Rizal et al., 2019). Currently, digital technology is extensively utilized in curriculum planning, implementation, and delivery (Zhao, Zhang, & Lai, 2010). The slight score difference between Indonesian and Malaysian students may be attributed to various factors, such as differences in curriculum goals, which can influence the utilization of ICT in the learning process (Rizal et al., 2019).

No significant differences were found in social presence and students' satisfaction between students residing in urban and rural areas. Currently, ICT usage is not limited to urban populations but has also increased in rural areas (Kamarudin et al., 2019). ICT has rapidly spread in developing countries, including rural areas, due to increased market penetration and the availability of affordable smartphones with wired or wireless networks (Onitsuka et al., 2018). Therefore, we cannot conclude that students living in rural areas have lower social presence and satisfaction compared to those in urban areas. One determining factor for differences is the quality of available internet services ($P < .05$), rather than the place of residence. Previous studies have shown that facilitating conditions significantly influence the use of ICT for educational purposes (Halili & Sulaiman, 2018; Priyanto, 2009). Additionally, students in urban areas tend to spend more time accessing the internet per day and engage in activities such as information, communication, audio, and video consumption (Loan, 2011).

Furthermore, male and female students exhibit similar levels of social presence and students' satisfaction, with females scoring slightly higher. Previous research has indicated slight differences in learning satisfaction between genders, with only one indicator showing a difference among the three satisfaction questions (Cuadrado-García, et al., 2010). Females tend to display higher satisfaction in online learning compared to males (González-Gómez et al., 2012). This score difference can be attributed to critical success factors in learning, such as learning styles. Female students generally prefer independent, competitive, dependent, participatory, and collaborative learning styles, while male students tend to be avoidant learners (Halili, Naimie, Sira, AhmedAbuzaid, & Leng, 2015). Women have more diverse preferences than men (Nuzhat et al., 2013), and these preferences influence their participation in online learning activities.

Another characteristic indicating a difference in social presence is the experience of attending online lectures ($P < 0.05$), while the variable of students' satisfaction shows a slight discrepancy with the p-value. Students who have experienced taking online lectures tend to receive higher scores compared to those who rarely or never attend online lectures. This could be attributed to their familiarity with online learning platforms and their understanding of the learning environment and atmosphere. Some online learning applications require user skills for optimal utilization. Experienced students find it easier to use, which impacts their social presence and satisfaction. Conversely, students who are new to online learning environments require time to adapt. This experience challenge is also faced by instructors who may find it challenging to design and develop teaching methods for an online environment (Bandias & Gilding, 2012). Instructors encounter various challenges in organizing online learning, including personal, course, contextual, and technological challenges (Aldowah et al., 2018).

Moreover, the Spearman's Rank-Order Correlation technique was employed to determine the relationship between social presence and students' satisfaction ($r = .618$, P

< 0.000). Several studies have revealed a connection between social presence and students' satisfaction (Alsadoon, 2018; Cobb, 2011; Gunawardena & Zittle, 1997; Horzum, 2015; Park & Kim, 2020; J. C. Richardson et al., 2017; Strong et al., 2012; Zhan & Mei, 2013). The strength of the relationship between social presence and satisfaction is influenced by the course duration, discipline, and the scale used to measure social attendance (J. C. Richardson et al., 2017). Other studies indicate that these two variables are associated with perceived learning (Cobb, 2011; J. Richardson & Swan, 2003), achievement (Dhaqane & Afrah, 2016; Neumann & Neumann, 1981) persistence (Joo et al., 2011; Schreiner & Nelson, 2013), and Online Enrollment Intent (Jr. & Crim, 2013). Participants who experienced a higher sense of social presence enhanced their social-emotional experience by using emoticons to compensate for missing nonverbal cues in written communication (Gunawardena & Zittle, 1997).

Good social interaction between students and teachers or among students can enhance engagement, motivation, and understanding of learning material. Students who feel more connected to their peers and instructors tend to be more satisfied with their learning experience (Alsadoon, 2018). Factors such as social support, collaboration, and interaction within the learning environment can strengthen social presence. The use of technology that facilitates communication and collaboration among students can also enhance social presence and, in turn, contribute to their learning satisfaction (Kožuh et al., 2015; Park & Kim, 2020). Although the influence of social presence on student learning satisfaction can vary depending on the context and implementation, social presence and satisfaction are crucial for students engaging in online learning to achieve their learning objectives optimally.

CONCLUSION

This study found that social presence and student satisfaction in attending online learning were in the good category, although there were still students whose scores were below average. There was a significant difference in social presence based on experience in online learning and network quality, while in the satisfaction variable, only network quality showed a difference. The analysis also revealed a strong correlation between social presence and student satisfaction. Educators need to implement effective strategies in online learning that do not solely burden students. They should create a pleasant online learning environment, foster a sense of online community, and facilitate discussions in online lectures.

This study has implications for the design and methods of learning. The demands of 21st-century learning require universities to adapt to these changes. Universities should revise their curriculum to be more ICT-friendly so that students can become accustomed to using the platform. Additionally, it is necessary to develop dedicated applications for implementing online lectures, rather than relying solely on open-source applications or social media. In the online learning process, lecturers need to use innovative and creative methods to create a welcoming learning atmosphere, which will increase social presence and student satisfaction in online learning. Educational policies should focus on training and developing educators to effectively implement online learning. Educators need to be equipped with the necessary skills and knowledge to create an enjoyable and interactive online learning environment. Furthermore, considering the rapid development of ICT usage in the learning process, the government can take steps such as providing adequate infrastructure, especially in rural areas, formulating online learning policies, allocating funds for the development of user-friendly online learning platforms, and encouraging

educators to adapt to the new learning environment. Moreover, on a broader scale, this study can encourage collaboration between Indonesia and Malaysia in the field of online learning. Exchanging knowledge, experiences, and resources between both countries can enhance the quality of online learning and benefit students in both nations.

This study has several limitations: 1) The survey was conducted as a cross-sectional study, and therefore, it is necessary to measure social presence and student satisfaction longitudinally. Longitudinal measurement is required to describe social presence and student satisfaction in their participation in online learning during the COVID-19 pandemic and the new normal era. 2) Measurement of social presence and student satisfaction solely through online surveys limits researchers' control over the data collection process, potentially introducing bias in the research findings. In the next study, a more in-depth measurement can be involved, such as conducting interviews using qualitative studies, to determine the extent of student satisfaction in participating in online lectures. 3) The analysis in this study only utilized descriptive statistics, comparing means of a few groups based on demographic characteristics and correlation tests. To obtain a more comprehensive research model, multiple variables should be measured using more complex tests.

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