Technology-Enhanced Learning in Higher Education: A Study of Attitudes and Perceptions toward Social Media

Kevin Fuchs* and Veronica Aguilos

***Abstract*—The use of social media technology to support and facilitate undergraduate studies has created a lot of speculation among educators and researchers. The fast adoption of social media technology has caused a fundamental shift in the way people communicate and collaborate. Students utilize social media mostly in their personal lives. However, its use in higher education for instructional reasons is fast-growing. The study aims to examine students' attitudes and perceptions toward using social media, and the privacy concerns they may associate with the use of social media. A survey questionnaire was used as an empirical data source and the final sample included 197 responses, which were analyzed descriptively. The results revealed that the majority of students are aware of how to use social media comfortably for educational purposes. Nevertheless, concerns were raised regarding a lack of knowledge about rules and regulations, as well as an inability to control the use of social media for educational purposes. The study contributes to the discussion about social media as an educational tool and provides insights into potential obstacles and hurdles in its implementation. The article concludes by discussing the results and providing theoretical and practical implications for academia.**

***Index Terms*—Social media, mediated communication, higher education, privacy concerns, undergraduate**

I. Introduction, Background, and Rationale

A. Study Background

The use of social media technology to support and facilitate undergraduate studies has created much speculation among educators and researchers [1, 2]. Social media has evolved as a significant means of communication around the world, and its widespread use has altered how people communicate and engage online [2]. Social media is changing how corporations contact their audiences and interact with individuals beyond the confines of personal communication [3]. Social networking sites, blogs, vlogs, instant messaging, and virtual communities are examples of social media channels [1, 3]. Social media has become a vital element of almost all industrial sectors' operations, and higher education institutions are similarly prioritizing social media in engaging with their target audience [4]. This is also because social media has become the major method of connection around the globe for the younger generation, which is the key audience for higher education institutions [5].

The educational benefits of incorporating social media into classroom environments are debatable [6]. According to research on social media in education, the inclusion of social media in learning and teaching contexts may result in new kinds of inquiry, communication, cooperation, identity work, or positive cognitive, social, and emotional effects [7]. It is said that the successful integration of social media into the learning process depends on the course instructors' ability and, therefore, influences the effectiveness of the use of social media in "formal education" [8]. Despite a growing amount of work concerned with social media and students' learning, only limited consideration has been paid to the form or substance of that learning and the associated barriers [9]. For example, cyberbullying on social media websites [10], detracting from human interaction by using more social media in the classroom [11], or the invasion of personal space and privacy [12] are among the emerging concerns. The present study aims to further investigate the emerging concern of privacy and invasion of personal space through the implementation of social media for in-class and out-of-class activities.

B. Social Media in Higher Education

The fast adoption of social media technology has caused a fundamental shift in the way people communicate and collaborate [1]. Because staff and students utilize social media technologies in their personal lives, it is necessary to investigate how they are employed as instructional tools [12]. Fuchs [12] empirically investigated the perceived usefulness of social media through an exploratory interview study with undergraduate students. The results of his study revealed that the majority of students found the use of social media during their studies beneficial. In particular, a direct communication channel with their course instructor was perceived as the primary advantage of social media. Nevertheless, the study also revealed that students expressed privacy concerns when it came to the use of social media for their studies [12]. Similarly, Aymerich-Franch and Fedele [13] examined privacy concerns raised by students about the use of social media in their studies.

The results of their study revealed that "although students generally accept using social media in the instructional arena, privacy concerns can easily emerge" [13]. Students utilize social media mostly in their personal lives. However, its use in higher education for instructional reasons is fast-growing [13]. Students' feelings that their personal space is being violated due to intrusions on their privacy warrant an exploration of the general sentiment toward privacy concerns when it comes to the use of social media for their undergraduate studies [12]. In particular, the study aims to examine students' attitudes and perceptions toward the use of social media, and the privacy concerns they may associate with the use of social media. Moreover, the study seeks to investigate sociodemographic influences (sex, age, or nationality) on these attitudes and perceptions. Identifying

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students' attitudes and perceptions based on sociodemographic factors will contribute to the emerging body of knowledge and provide researchers with a baseline for future study.

The associations between perceptions and attitudes can be closely related to one school of thought in the embodied cognition literature [14] and are sometimes used interchangeably [15]. Often, an attitude is what one feels about something and is highly subjective [14]. Perception is what one thinks about something after analyzing concrete logical facts about it, and it is not highly subjective [16]. Therefore, a student's attitude is their tendency to respond a certain way toward something [15, 16]. Attitudes toward learning are important factors in the learners' levels of goal setting, problem-solving abilities, beliefs about learning, inner and external motivations in the process of learning, and academic performance [17]. Sociodemographics, on the other hand, are characteristics of a population (e.g., student population). Generally, these characteristics are not limited to but include age, gender, ethnicity, education level, income, years of experience, and geographical location [18]. The use of social media for educational purposes has increased tremendously in higher education [12]. However, students' concerns about the use of social media for their studies are not clearly understood [11] or measured through a psychometric scale [19].

Many social media platforms-including the most commonly used applications like Facebook, Instagram, and Twitter-are built on the excessive collection, algorithmic processing, and commercial exploitation of users' data [4]. The extraordinary growth of social media has given platforms remarkable access to, and influence in, the lives of their users. Social networking companies harvest sensitive data about individuals' activities, interests, personal characteristics, political views, purchasing habits, and online behaviors [20]. In the context of the study and its associated survey questionnaire, the term "data privacy" is interpreted as the protection of personal data from those who should not have access to it and the ability of individuals to determine who can access their personal information [21, 22].

II. Methods and Materials

A. Research Instrument

After a rigorous review of the literature, a survey questionnaire was developed to examine the students' attitudes and perceptions toward using social media and the privacy concerns they may associate with the use of social media. The survey questionnaire consists of 18 items. Eight items were used to establish the sociodemographic profile of the participants and ten items were used to examine their attitudes and perceptions. A five-point Likert-type scale was used in which responders specified their level of agreement with a statement, typically in five points [19]. The default responses on the Likert-type scale ranged from 1 (lowest) to 5 (highest), i.e., Disagree (1), Somewhat Disagree (2), Neither Agree nor Disagree (3), Somewhat Agree (4), and Agree (5). The ten survey statements were adopted from the previously discussed literature and modified to the context of the study. Furthermore, Cronbach's alpha was calculated to assess the internal consistency of the questionnaire. Cronbach's alpha was quantified with 0.853 indicating high internal consistency among the ten survey statements. The survey questionnaire was endorsed for validity by two research experts in the field of educational social science research. After adjustment of the statements accordingly, the instrument was tested in a pilot focus group discussion consisting of ten students to ensure comprehension.

B. Data Collection

The data were collected from undergraduate students through simple random sampling, which is a probability sampling method that allows the sampling error to be calculated [23]. The targeted student population was individually contacted via LINE messenger (a commonly used social media application for communication). A call-to-action with a link to the online survey was sent to a total of 300 students, emphasizing that their participation would be voluntary, anonymous, and unrelated to their academic performance. A potential disadvantage of random sampling is the lack of sufficient responses that fit the desired characteristic of interest [24]. To manage such potential limitations, the survey questionnaire was administered in the final phase to specific sociodemographic clusters (i.e., gender or year of study) to increase the probability of reaching the desired population. The survey questionnaire was administered bilingually, i.e., Thai and English, to a population of Thai and international undergraduate students in Phuket, Thailand in May 2022. After the collected data were screened, 12 inconclusive/incomplete responses were discarded from inclusion. The final sample included 197 responses and was analyzed descriptively (yielding a 65.7% response rate). Based on the eligible responses, the sociodemographic profile of the respondents included sex, age, nationality, and disposable income as summarized in Table I.

TABLE I: Sociodemographic Profile of the Participants Summarized from the Survey Questionnaire

Characteristic		Frequency	Percentage
Sex	Male	50	25.4%
	Female	147	74.6%
Age [1]	18 years old	38	19.3%
	19 years old	57	28.9%
	20 years old	29	14.7%
	21 years old	36	18.3%
	22 years old	37	18.8%
Nationality	Thai	147	74.6%
	Non-Thai[2]	50	25.4%
Monthly Disposable Income	Less than THB 5,000	51	25.8%
	THB 5,001 – 10,000	113	57.4%
	THB 10,001 – 15,000	21	10.7%
	More than THB 15,000	12	6.1%

[1] Mean age: 19.9 years old; [2] Non-Thai includes a total of seven nationalities; however, to ensure the anonymity of the participants, the individual nationalities were grouped and labeled together as non-Thai or international.

C. Data Analysis

The collected responses were analyzed using the

open-source software application JASP [25]. Descriptive statistics were used to analyze the dataset by calculating mean, median, and mode scores for each statement. Furthermore, the SD (standard deviation), minimum values, maximum values, and distribution of responses were calculated for each statement. The descriptive analysis process was repeated for different subsets of sociodemographic characteristics (sex, age, or nationality) in line with the original research objective based on good practice [26]. A Pearson correlation coefficient was computed to assess the linear relationship between the ten individual statements to detect statistically significant relationships. All results are presented in Tables II-III (and Table IV in the Appendix) and Fig. 1 and Fig. 2 in the subsequent sections of this report. Furthermore, ethical norms were considered in implementing the study and analyzing the data. These ethical norms included issues such as "requirements for honesty, requirements for informed consent, anonymization and storage of data, the right of access to data for participants, and duty of confidentiality for all those who undertake research" [27]. All of these aspects were appropriately considered and extended to the participants of the study.

TABLE II: PAIRWISE CORRELATION OF THE STATEMENTS SUMMARIZED FROM THE SURVEY QUESTIONNAIRE

-/-	S2	S3	S4	S5	S6	S7	S8	S9	S10
S1	0.59***	0.489***	0.357***	0.535***	0.363***	0.343***	0.495***	0.415***	0.368***
S2	-	0.423***	0.329***	0.538***	0.405***	0.340***	0.478***	0.416***	0.448***
S3		-	0.214**	0.356***	0.331***	0.273***	0.582***	0.407***	0.318***
S4			-	.392***	0.174*	0.267***	0.227**	0.253***	0.258***
S5				-	0.393***	0.289***	0.326***	0.375***	0.360***
S6					-	0.453***	0.394***	.374***	0.505***
S7						-	0.310***	0.255***	0.411***
S8							-	0.467***	0.433***
S9								-	0.317***

Levels of significance: * $p<0.05$, ** $p<0.01$, *** $p<0.001$.

D. Unstructured Interviews

In the last step, a series of structured interviews was arranged with selected students who expressed concerns about their privacy when using social media for educational purposes. Qualitative research allows for the development of a more comprehensive understanding of what can be obtained through quantitative research [28]. An interview is generally a qualitative research technique that involves asking open-ended questions to converse with respondents and collect data about a subject [29]. To gain a better understanding of privacy concerns, students were purposively recruited based on their responses to the survey questionnaire (i.e., expressing strong concerns about their privacy). The recruited students were asked about their particular concerns with regard to the use of social media for their coursework, i.e., for in-class activities and out-of-class activities. In total, thirteen students were interviewed; the results are presented and interpreted in the following sections.

III. EMPIRICAL RESULTS

A. Participants

First, the sociodemographic profile of the participants revealed that out of the 197 valid responses, 147 (74.6%) could be accredited to female students, while the remainder (n = 50; 25.4%) could be accredited to male students. Although three-quarters of the respondents were female, the gender distribution was representative of the overall population of the surveyed programs, which can be attributed to the degree programs in which the students were enrolled (i.e., tourism and hospitality programs, respectively). Moreover, the mean age of respondents corresponded to 19.9 years with a range between 18 to 22 years old. Next, about three-quarter of participants (n=147; 74.6%) were Thai students, with the remainder (n=50; 25.4%) being international students comprising seven nationalities. The share of international students further exhibited internationalization among the sample. The last sociodemographic characteristic was related to the students' self-reported disposable monthly income. This could be attributed to their monthly allowance, pocket money, or wages from part-time employment. The majority of participants (n=113; 57.4%) had a disposable monthly income in the range of THB 5,001 and THB 10,000 (Table I).

B. Pairwise Correlation

A Pearson correlation coefficient was computed to assess the linear relationship between the ten individual statements to detect statistically significant relationships. The Pearson correlation coefficient was used to examine the strength and direction of the linear relationship between two continuous variables [30]. Table II reports the correlation coefficient between the 45 relationships. It can be noted that there was a statistically significant positive correlation for all relationships (Table II). The correlation coefficient can range in value from − 1 to + 1. The larger the absolute value of the coefficient, the stronger the relationship between the variables [30]. There was a total of five relationships above the threshold of $r < 0.5$, indicating a moderately large positive relationship [31]. Namely, these relationships were S1-S2 (r=0.594; p<0.001), S1-S5 (r=0.535; p<0.001), S2-S5 (r=0.538; p <0.001), S3-S8 (r =0.582; p <0.001), and S6-S10 (r =0.505; p <0.001).

C. Distribution of Responses

Fig. 1 and Fig. 2 report the distribution of responses per statement summarized from the empirical survey questionnaire. Generally, there was a negative skew distribution with about three-quarters of the responses observed for the third and fourth categories on the Likert-type scale. For a unimodal distribution, a negative skew commonly indicates that the tail is on the left side of the distribution [32]. At large, about one-third of respondents

neither agreed nor disagreed with the ten statements (ranging from 33.0% to 41.6%). Moreover, roughly one-third of the respondents expressed slight agreement with the statements (ranging from 28.9% to 46.7%). Less than 40% (38.6%) agreed that their personal space was compromised when they used personal social media for educational purposes (S4), while approximately 60% of the students agreed that "teachers have a responsibility to teach students about data privacy policies and practices" (S8). Furthermore, approximately half of the students raised concerns about negative effects on their studies if they did not consent to use social media for educational purposes (S9).

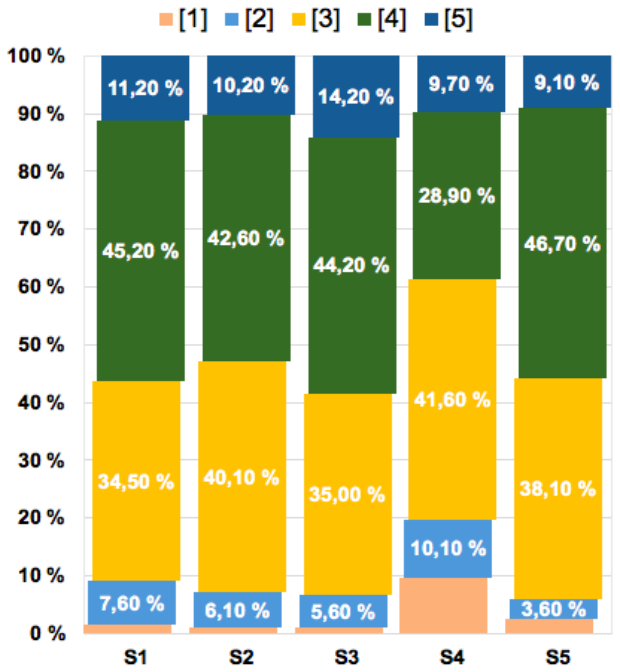

Fig. 1. Distribution of responses summarized from the survey questionnaire (Statements 1 - 5).

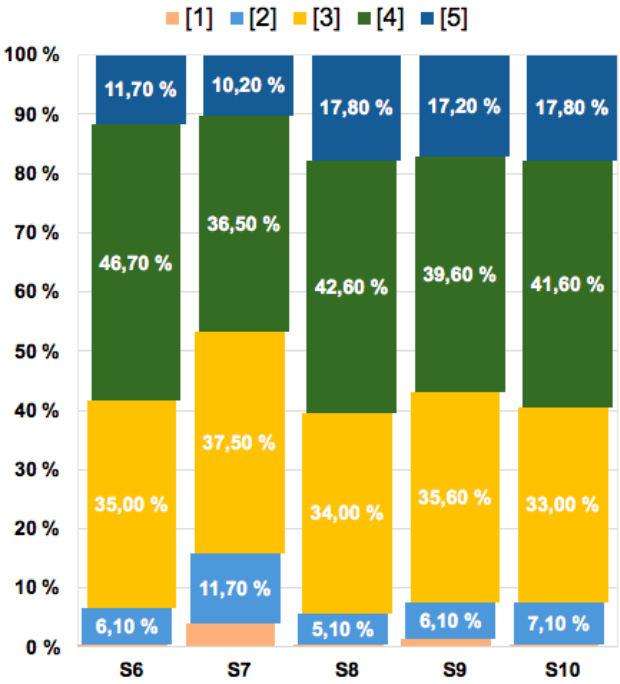

Fig. 2. Distribution of responses summarized from the survey questionnaire (Statements 6 - 10).

D. Analysis Based on Sociodemographic Factors

Table III reports the mean ratings based on three different categories (i.e., sex, age, and nationality) with two sociodemographic factors in each category as a point of comparison (i.e., male vs. female students, students aged 19 or below vs. students aged 20 or above, and Thai students vs. international students). Overall, female students expressed higher agreement with feeling comfortable and confident in using social media for educational purposes in contrast to their male peers. Moreover, Thai students showed higher agreement than their international peers on all ten statements. The largest difference in mean ratings was observed for statement three ("I am confident in using my social media for educational purposes"); the Thai students' mean rating amounted to 3.74 as compared to 3.19 for the international students. Lastly, the smallest variances in mean ratings were observed for the age groups (i.e., students aged 19 or below vs. students aged 20 or above).

TABLE III: RESPONSES BASED ON SOCIODEMOGRAPHIC FACTORS (SEX, AGE, AND NATIONALITY) SUMMARIZED FROM THE SURVEY QUESTIONNAIRE

Statements	Sex		Age [1]		Nationality	
	Male	Female	≤ 19 years	≥ 20 years	Thai	Non-Thai
S1	3.36	3.64	3.54	3.60	3.63	3.23
S2	3.36	3.61	3.61	3.49	3.61	3.23
S3	3.52	3.70	3.63	3.67	3.74	3.19
S4	3.30	3.15	3.15	3.23	3.23	2.97
S5	3.44	3.61	3.66	3.47	3.59	3.42
S6	3.40	3.71	3.62	3.64	3.68	3.39
S7	3.42	3.35	3.37	3.36	3.39	3.22
S8	3.62	3.76	3.73	3.72	3.78	3.39
S9	3.60	3.67	3.65	3.65	3.69	3.45
S10	3.46	3.77	3.67	3.71	3.75	3.36

[1] The age group ≤ 19 years consists of students aged 18 or 19 years, whereas the age group ≥ 20 years consists of students aged 20, 21, or 22 based on a mean age of 19.9 years.

E. Empirical Interview Data

Lastly, the structured interviews revealed empirical findings with twofold insights. The participants were asked about "why using their social media account for their coursework would make them feel uncomfortable." The majority of the interviewed undergraduate students said that they felt "omitted" and that it was not a matter of objecting to using their social media for coursework, but more a matter of "giving prior consent" to the respective course instructor. One student stated, "I do not mind using my social media, but the teacher should ask us in advance and give us alternatives" (P-2). Another student commented that "normally we have to complete many online surveys for the university, but nobody asked our opinion on these things" (P-7). Generally, there was consent among the interviewees that using their social media was not much of a concern if prior consent was obtained or a discussion took place in advance. Furthermore, none of the interviewed students expressed concerns about data privacy or protection.

F. Summary of Empirical Findings

To summarize, it can be noted that among the 197 surveyed students, there was an awareness of how to use

social media comfortably for educational purposes (S1; less than 10% disagreed). However, the sentiment of having control over whether or not they wanted to use it was largely undecided (S2). Furthermore, a moderately strong correlation was detected between the ability to control the use of social media (S2) and the sentiment of concern about how personal data are used (S5). Another moderately strong relationship was identified between the students' confidence in using social media for educational purposes (S3) and the responsibility of the educator to teach about data privacy (S8). Moreover, about 60% of the students agreed that they were consciously aware of the content that they share on social media when using it for educational purposes. Last, less than half of the surveyed students were fully aware of the rules and regulations concerning data privacy when using their social media for educational purposes (S7).

IV. Discussion

A. Academic Discussion

The study aimed to examine students' attitudes and perceptions toward the use of social media and the privacy concerns associated with it. Moreover, the study investigated sociodemographic influences (sex, age, or nationality) on these attitudes and perceptions, similar to other studies that aimed to investigate sociodemographic differences among students [33], [34]. The identification of students' attitudes and perceptions based on sociodemographic factors will contribute to the emerging body of knowledge and provide researchers with a baseline for future research. A variety of noteworthy findings was revealed based on the analysis of the empirical data. The study results support the idea that social media is accepted as a socialization tool for young individuals [35], [36].

Moreover, as a significant part of our daily lives, social media has become an indispensable habit among young people, including undergraduate students [35]. Much of their daily communication and sharing related to their studies have been moved to these platforms [9]. Furthermore, as information technologies become part of education, the students affirmed that the importance of data security and data protection is expected to increase in the same direction. Generally, the students affirmed their awareness of data privacy related to social media and expressed concern about being prompted to use personal social medial applications for coursework (either in-class activities or out-of-class activities). Their awareness and concern for data privacy can be attributed to a general level of basic education as part of their degree studies, to which some of the participants attested. However, improving digital literacy skills - as a part of 21st-century skills - was positively attributed to increased awareness of data privacy and necessary actions to protect users' information, as mentioned by Beck *et al.* [37].

Similarly, Gogus and Saygın [33] empirically investigated the privacy perceptions of 1065 high school students regarding social media. Their study discovered that the students felt comfortable within their network (i.e., teachers and peers), but considered parties beyond that network to be a threat to their privacy [33]. Although the present study did not assess if threat perception differed based on the stakeholder, it could be hypothesized that older students (i.e., university students vs. high school students) have a different threshold concerning their personal network and consider their course instructor to be an external party to that network. Moreover, data privacy laws in the context of this study (i.e., Thailand) differ largely from more stringent regulations in Western nations (for example, GDPR in the European Union), which could also impact the data privacy perception, as indicated by Rosenberg *et al.* [38].

Nonetheless, the students' stance was not black and white when it came to dismissing the use of social media for their coursework; instead, they sought an open dialogue with their course instructor and want to be asked for their consent. As outlined by Shane-Simpson *et al.* [35], the complex relationships between personal characteristics, priorities for privacy versus self-expression, and bonding and bridging social capital highlight the need for future studies that disentangle different strategies for balancing privacy and social connection given the unique affordances of sites as well as personal characteristics and motivations for online behaviors.

B. Contribution

The study contributed to the body of knowledge by empirically investigating students' attitudes and perceptions regarding privacy concerns when it comes to using social media during their studies. This contemporary phenomenon is likely to receive more attention in the future given growing concerns among the general public about personal data protection and privacy when using social media [39]. The study established that many students are consciously aware of the positive and potentially negative impacts of using social media for their tertiary education. Bearing in mind the limitations, social media remains an effective and innovative tool for higher educational institutions in the 21st century [40]. Moreover, the study revealed that teachers have the responsibility of educating students about the impacts of social media.

C. Limitation

The results of this study should be interpreted in the appropriate context based on its limitations in sampling and research design. The sample of university students in this study was relatively small and randomly recruited from a public university in Thailand [41]. While attempts were made to recruit from other universities, the response rates were too small to include these participants for analysis. Therefore, future research should attempt to obtain a more representative national sample of students from several other universities. A wider national sample will also enable the formation of more assumptions concerning the privacy perceptions of undergraduate students, as they are heavy users of social media.

V. Conclusion

In the context of higher education, it is important to maintain an open dialogue with students about their preferences for embedding social media as a tool for communication. It is important to arrange a workshop or orientation for students about the rules, regulations, and data

protection rights of using social media, in particular, if the faculty or course instructor encourages or mandates communication via social media. Social media is likely to stay, and with increasing use in the classroom (either a physical classroom or a virtual classroom through distance education), it is important to provide students with a forum to voice their concerns.

APPENDIX

TABLE IV: DISTRIBUTION OF RESPONSES SUMMARIZED FROM THE SURVEY QUESTIONNAIRE

	(1)	(2)	(3)	(4)	(5)
S1	1.5%	7.6%	34.5%	45.2%	11.2%
S2	1.0%	6.1%	40.1%	42.6%	10.2%
S3	1.0%	5.6%	35.0%	44.2%	14.2%
S4	9.7%	10.1%	41.6%	28.9%	9.7%
S5	2.5%	3.6%	38.1%	46.7%	9.1%
S6	0.5%	6.1%	35.0%	46.7%	11.7%
S7	4.1%	11.7%	37.5%	36.5%	10.2%
S8	0.5%	5.1%	34.0%	42.6%	17.8%
S9	1.5%	6.1%	35.6%	39.6%	17.2%
S10	0.5%	7.1%	33.0%	41.6%	17.8%

The default responses on the Likert-type scale ranged from 1 (lowest) to 5 (highest), i.e., Disagree (1), Somewhat Disagree (2), Neither Agree nor Disagree (3), Somewhat Agree (4), and Agree (5)

A. Supplementary Materia–Survey Statements

Statement 1. I am comfortable using my social media for educational purposes.

Statement 2. I have control over whether I want to use my social media for educational purposes.

Statement 3. I am confident in using my social media for educational purposes.

Statement 4. I feel that my space is compromised when using my social media for educational purposes.

Statement 5. I am concerned about how my data is being used when using my social media for educational purposes.

Statement 6. I have enough control over my content when using my social media for educational purposes.

Statement 7. I am aware of the rules and regulations concerning data privacy when using my social media for educational purposes.

Statement 8. Teachers have a responsibility to teach students about data privacy policies and practices.

Statement 9. I am worried about the negative effects concerning my studies if I do not consent to use my social media for educational purposes.

Statement 10. I am consciously aware of the content that I share on my social media when using it for educational purposes.

CONFLICT OF INTEREST

The authors declare that the study was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

AUTHOR CONTRIBUTIONS

The authors confirm sole responsibility for the following: study conception and design, data collection, analysis and interpretation of results, and manuscript preparation.

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REFERENCES

[1] C. Davis III, R. Deil-Amen, C. Rios-Aguilar and M. González Canché, "Social media, higher education, and community colleges: A research synthesis and implications for the study of two-year institutions," *Community College Journal of Research and Practice*, vol. 39, no. 5, pp. 409-422, 2014.

[2] V. Kumar and P. Nanda, "Social media in higher education," *International Journal of Information and Communication Technology Education*, vol. 15, no. 1, pp. 97-108, 2019.

[3] C. Carr and R. Hayes, "Social media: Defining, developing, and divining," *Atlantic Journal of Communication*, vol. 23, no. 1, pp. 46-65, 2015.

[4] S. Manca, "Snapping, pinning, liking or texting: Investigating social media in higher education beyond Facebook," *The Internet and Higher Education*, vol. 44, p. 100707, 2020.

[5] E. Lacka, T. Wong and M. Haddoud, "Can digital technologies improve students' efficiency? Exploring the role of virtual learning environment and social media use in higher education," *Computers & Education*, vol. 163, p. 104099, 2021.

[6] M. Halim and H. Hashim, "Integrating web 2.0 technology in ESL classroom: A review on the benefits and barriers," *Journal of Counseling and Educational Technology*, vol. 2, no. 2, p. 57, 2019.

[7] Hong, M. Hwang, E. Szeto, C. Tsai, Y. Kuo and W. Hsu, "Internet cognitive failure relevant to self-efficacy, learning interest, and satisfaction with social media learning," *Computers in Human Behavior*, vol. 55, pp. 214-222, 2016

[8] D. Castilla, C. Botella, I. Miralles, J. Bretón-López, A. M. Dragomir-Davis, I. Zaragoza, and A. Garcia-Palacios, "Teaching digital literacy skills to the elderly using a social network with Linear Navigation: A case study in a rural area," *International Journal of Human-Computer Studies*, vol. 118, pp. 24–37, 2018.

[9] M. Latif, I. Hussain, R. Saeed, M. Qureshi and U. Maqsood, "Use of smart phones and social media in medical education: trends, advantages, challenges and barriers," *Acta Informatica Medica*, vol. 27, no. 2, p. 133, 2019.

[10] E. Whittaker and R. Kowalski, "Cyberbullying via social media," *Journal of School Violence*, vol. 14, no. 1, pp. 11-29, 2014.

[11] D. Westerman, E. Daniel and N. Bowman, "Learned risks and experienced rewards: Exploring the potential sources of students' attitudes toward social media and face-to-face communication," *The Internet and Higher Education*, vol. 31, pp. 52-57, 2016.

[12] K. Fuchs, "An exploratory interview study about student perceptions of using social media to facilitate their undergraduate studies," *Frontiers in Education*, vol. 7, 2022.

[13] L. Aymerich-Franch and M. Fedele, "Students' privacy concerns on the use of social media in Higher Education," *Digital Arts and Entertainment*, pp. 1327–1348, 2014.

[14] N. Schwarz, "Attitude construction: Evaluation in context," *Social Cognition*, vol. 25, no. 5, pp. 638–656, 2007.

[15] R. E. Nisbett and Y. Miyamoto, "The influence of culture: Holistic versus analytic perception," Tren*ds in Cognitive Sciences*, vol. 9, no. 10, pp. 467–473, 2005.

[16] G. Holliman and J. Rowley, "Business to business digital content marketing: Marketers' perceptions of best practice," *Journal of Research in Interactive Marketing*, vol. 8, no. 4, pp. 269–293, 2014.

[17] H. Ş. Şen, "The attitudes of university students towards learning," *Procedia - Social and Behavioral Sciences*, vol. 83, pp. 947–953, 2013.

[18] V. S. Gavalas, K. Rontos, and L. Salvati, "Who becomes an unwed mother in Greece? sociodemographic and geographical aspects of an emerging phenomenon," *Population, Space and Place*, vol. 20, no. 3, pp. 250–263, 2013.

[19] S. Y. Chyung, K. Roberts, I. Swanson, and A. Hankinson, "Evidence-based survey design: The use of a midpoint on the Likert scale," *Performance Improvement*, vol. 56, no. 10, pp. 15–23, 2017.

[20] M. Bossetta, "The digital architectures of social media: Comparing political campaigning on Facebook, Twitter, Instagram, and Snapchat in the 2016 U.S. election," *Journalism & Mass Communication Quarterly*, vol. 95, no. 2, pp. 471–496, 2018.
[21] J. T. Jost, P. Barberá, R. Bonneau, M. Langer, M. Metzger, J. Nagler, J. Sterling, and J. A. Tucker, "How social media facilitates political protest: Information, motivation, and social networks," *Political Psychology*, vol. 39, pp. 85–118, 2018.
[22] M. Lanzing, "'strongly recommended' revisiting decisional privacy to judge hypernudging in self-tracking technologies," *Philosophy & Technology*, vol. 32, no. 3, pp. 549–568, 2018.
[23] S. K. Yadav, C. Kadilar, J. Shabbir, and S. Gupta, "Improved family of estimators of population variance in simple random sampling," *Journal of Statistical Theory and Practice*, vol. 9, no. 2, pp. 219–226, 2014.
[24] K. Fuchs, "Survey dataset for the perceived consciousness towards environmental sustainability by undergraduate students," *Data in Brief*, vol. 41, p. 107985, 2022.
[25] J. Love, R. Selker, M. Marsman, T. Jamil, D. Dropmann, J. Verhagen, A. Ly, Q. F. Gronau, M. Smíra, S. Epskamp, D. Matzke, A. Wild, P. Knight, J. N. Rouder, R. D. Morey, and E.-J. Wagenmakers, "JASP: Graphical statistical software for common statistical designs," *Journal of Statistical Software*, vol. 88, no. 2, 2019.
[26] M. J. Fisher and A. P. Marshall, "Understanding descriptive statistics," *Australian Critical Care*, vol. 22, no. 2, pp. 93–97, 2009.
[27] N. Emmerich, "Reframing research ethics: Towards a professional ethics for the social sciences," *Sociological Research Online*, vol. 21, no. 4, pp. 16–29, 2016.
[28] K. Malterud, V. D. Siersma, and A. D. Guassora, "Sample size in qualitative interview studies," *Qualitative Health Research*, vol. 26, no. 13, pp. 1753–1760, 2016.
[29] S. R. Mohd Arifin, "Ethical considerations in qualitative study," *International Journal of Care Scholars*, vol. 1, no. 2, pp. 30–33, 2018.
[30] P. Schober, C. Boer, and L. A. Schwarte, "Correlation coefficients," *Anesthesia & Analgesia*, vol. 126, no. 5, pp. 1763–1768, 2018.
[31] H. Akoglu, "User's guide to correlation coefficients," *Turkish Journal of Emergency Medicine*, vol. 18, no. 3, pp. 91–93, 2018.
[32] P. T. von Hippel, "Mean, median, and Skew: Correcting a textbook rule," *Journal of Statistics Education*, vol. 13, no. 2, 2005.
[33] A. Gogus and Y. Saygın, "Privacy perception and information technology utilization of high school students," *Heliyon*, vol. 5, no. 5, 2019.
[34] K. Fuchs, P. Promsivapallop, and F. Jing, "Factors influencing tourism students' intentions towards Environmental Sustainability," *Current Issues in Tourism*, pp. 1–7, 2022.
[35] C. Shane-Simpson, A. Manago, N. Gaggi, and K. Gillespie-Lynch, "Why do college students prefer Facebook, Twitter, or Instagram? site affordances, tensions between privacy and self-expression, and implications for social capital," *Computers in Human Behavior*, vol. 86, pp. 276–288, 2018.
[36] E. D. Torun, "Educational use of social media in higher education: Gender and social networking sites as the predictors of consuming, creating, and sharing content," *Acta Educationis Generalis*, vol. 10, no. 2, pp. 112–132, 2020.
[37] E. Beck, M. E. Goin, A. Ho, A. Parks, and S. Rowe, "Critical digital literacy as method for teaching tactics of response to online surveillance and privacy erosion," *Computers and Composition*, vol. 61, p. 102654, 2021.
[38] J. M. Rosenberg, M. Burchfield, C. Borchers, B. Gibbons, D. Anderson, and C. Fischer, "Social media and students' privacy: What schools and districts should know," *Phi Delta Kappan*, vol. 103, no. 2, pp. 49–53, 2021.
[39] J. Idrais, Y. El Moudene, and A. Sabour, "Characterizing user behavior in online social networks: Analysis of the regular use of Facebook," *International Journal of Electrical and Computer Engineering*, vol. 11, no. 4, p. 3329, 2021.
[40] K. Fuchs, "Innovative teaching: A qualitative review of flipped classrooms," *International Journal of Learning, Teaching and Educational Research*, vol. 20, no. 3, pp. 18–32, 2021.
[41] K. Fuchs, "Advances in tourism education: A qualitative inquiry about emergency remote teaching in higher education," *Journal of Environmental Management and Tourism*, vol. 12, no. 2, p. 538, 2021.

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