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PAPER

The Use of Social Media to Enhance Critical Thinking in Online Learning Among Higher Education Students

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ABSTRACT

In higher education, fostering critical thinking skills is crucial for students because they are among the most sought-after employability skills. Recognizing the importance of cultivating critical thinking skills among online learners, educators are exploring innovative strategies to harness the power of social media platforms to enhance students' critical thinking abilities. Therefore, this study investigates these issues using survey methods on final-year undergraduate students from two public universities. A total of 128 students who had experiences in learning online during the pandemic have been randomly chosen. The survey includes two constructs related to social media and critical thinking during online learning. The findings show that majority students agree with the utilization of social media for their online classes. They also agree that social media can serve as a platform to discuss and collaborate for post-class sessions. Furthermore, the regression analysis illustrates demographic factors such as gender, age, and university program that significantly predicted the perception of social media for teaching and learning. However, these factors were not found to be significant predictors of the activities applied in social media to enhance students' critical thinking. Therefore, this study conclusively demonstrates that students' critical thinking can be elevated through the integration of social media into online learning. However, it is imperative that learning activities are meticulously designed to ensure the effectiveness of the learning process.

KEYWORDS

social media, critical thinking, online learning, higher education, regression

1 INTRODUCTION

The growing number of users on social media has piqued the interest of researchers in exploring their potential for educational contexts. These investigations aim to discern whether online social learning environments are conducive to effective teaching and learning in higher education. Within the realm of higher education, the cultivation of critical thinking skills is of paramount importance, as it stands as

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one of the most sought-after employability skills. Therefore, the integration of critical thinking into the curriculum becomes imperative. Despite this, the lack of specific guidelines for educators to design social learning environments that effectively foster critical thinking among higher education students using social media is apparent. This research endeavors to bridge this gap by investigating the practices applicable to the social network medium, with the goal of enhancing students' critical thinking.

A social learning environment, as depicted by [1], is an online domain where individuals converge to co-create content, share knowledge, and mutually learn. This environment amalgamates various social components such as networking, tagging, file sharing, and microblogging, thereby fostering a secure realm conducive to collaborative work and learning. Group Work and Written Communication are identified as crucial attributes within social learning by [1]. Notably, the concept of Group Work has been extensively studied, with research, such as that by [2], indicating its potential in enhancing students' learning within Web-Based Learning Environments (WBLEs). However, it is imperative to acknowledge that merely assigning students to group tasks doesn't necessarily guarantee seamless collaboration among team members. In some instances, students might prefer individual work due to the challenges associated with interacting with peers.

Further research by [3] reinforced the notion that collaborative learning via SNSs can significantly influence critical thinking skills among higher education students. Additionally, the work of [4] highlights the necessity of incorporating digital platforms, such as social media, to foster engagement and interaction among students, thus enriching their learning experiences.

2 PROBLEM BACKGROUND

Online learning has been expanding through the years within higher education, and its success in the education world has led to better learning and teaching experiences for both students and educators. For the same reason, educators need to catch up with students who are currently more proficient in these technologies, especially in using social media. The use of social media such as Twitter, Facebook, TikTok, Snapchat and Instagram have attracted millions of users around the world including our students. As a result, this study benefits the popularity of a Social Networking Site, Facebook, that is capable of attracting students to participate in discussions. Facebook is claimed to complement online learning and traditional classroom [5]. Thus, Facebook can be used as a platform for learning purposes particularly to support discussion, argumentation and knowledge construction [6].

However, depending solely on the Facebook medium does not guarantee active students' participation in online learning. Educators need pedagogical approach that can initiate students' learning into active learning environment in online discussions. One of the teaching and learning techniques that may initiate active learning in online discussions is Collaborative Learning. Collaborative Learning is more than just teamwork. It covers the whole process of learning. All the students are responsible for themselves and for the group. Achieving the goal means that all the students help each other in finding, synthesis and analysis of information and the evaluation and acceptance of the final decision. In collaborative learning, the problems are solved in groups and knowledge is a side effect of it. Every student in the group has a role and access to a variety of sources. At each stage of learning and collaborative interaction, students should be free to express their opinions. In collaborative learning, the teacher has a role of moderator. A teacher only direct group work, giving advices to students and not interfere. Each member of the group must be responsible for their own work [7].

According to [7], collaborative learning has a strong influence on critical thinking through discussion, debate and assessment of different conclusions. Fostering critical thinking skills is crucial among higher education students because it is part of employability skills that they need to possess when they graduate [8]. There is a concern whether students learn how to think critically in higher education. Thus, in higher education, teaching to think critically has to be infused in curriculum and not to learn it separately. Hiltz [2] claimed that teaching critical thinking embedded into a curriculum is slightly more effective than teaching it separately. As a result, teaching students how to develop critical thinking skills is required in higher education and it needs to be infused across subject domains. In the Malaysian context, based on Malaysia Education Blueprint 2015–2025 (higher education), graduates lack critical thinking skills that are essential for success in the 21st century [9]. TalentCorp [10] and [11] have reported on the increasing demand for critical thinking skills among graduates, signaling much needs to be done in preparing our graduates for the future's World of Works.

Recent research has delved into the transformative potential of social media in enhancing students' critical thinking skills. Orhan [12] conducted a comprehensive study investigating the impact of social media integration into educational settings. Their findings illuminated the positive correlation between active engagement with social media platforms and the development of critical thinking abilities among students. The study emphasized that social media not only serves as a supplementary tool for learning but also creates an interactive space where students can engage in thoughtful discourse and collaborative problem-solving, thereby fostering analytical thinking.

Liu et al. [13] further contributed to this discourse by examining the role of specific social media tools in collaborative learning environments. Their research highlighted how targeted use of social media platforms can stimulate analytical thinking and enhance problem-solving skills. By incorporating interactive elements and facilitating peer-to-peer discussions, social media emerges as a dynamic catalyst for cultivating critical thinking among students. These studies collectively underscore the potential of social media as a valuable educational resource that goes beyond traditional teaching methods, providing a platform for students to actively participate in knowledge-sharing activities that nurture their critical thinking capabilities. Moreover, [14] stated, when incorporating social media into course development, it is essential to prioritize planning that center on desired outcomes rather than specific platforms. This strategic approach ensures a thoughtful integration that aligns with educational goals. Moreover, fostering collaboration with students is paramount in promoting critical thinking. By involving learners in decisions related to social media use, educators can create an inclusive and participatory environment. This collaborative approach not only enhances student engagement but also empowers them to take an active role in shaping their learning experiences, contributing to the development of critical thinking skills. Thus, enhancing students' critical thinking is important and compulsory to be part of teaching and learning curriculum in higher education in Malaysia.

3 METHODOLOGY

This study was conducted among 128 students from 2 public universities who were randomly selected and had prior experience in online learning during the pandemic. All participants had an educational background. The questionnaires consisted of three parts: Part A—Demographics, Part B—Perception of Using Social Networks for Teaching and Learning, and Part C—The Features of Social Networks to Enhance Students' Critical Thinking. The distribution of the samples is presented in Table 1 below.

Table 1. Students demography

Gender	Frequency	Name of Programme
Male	38	Bachelor of Science in Education (Mathematics) Bachelor of Science in Education (Chemistry) Bachelor of Science in Education (TESL) Bachelor of Science in Education (Biology) Bachelor of Technology with Education (Building Construction) Bachelor of Technology with Education (Electrical and Electronics) Bachelor of Technology with Education (Sport Science) Bachelor of Technology with Education (Building Construction) Bachelor of Technology with Education (Living Skills)
Female	90	

The questionnaire was distributed online via Google Form to the samples. The objectives of this research are:

i) To investigate the students' perception of using social network for teaching and learning
ii) To investigate the features of social networking that enhance students' critical thinking
iii) To predict the significance of gender, age, and university program on students' perception of social media for teaching and learning by using regression
iv) To predict the significance of gender, age, and university program on the activities in social media that enhance students' critical thinking

4 FINDING AND DISCUSSION

4.1 Students' perception of using social media for teaching and learning

This section (Section B) consists of 11 items in the questionnaire, which inquire about the students' perception of using social media for teaching and learning. The findings are presented in Table 2 below.

Table 2. Students' perception of using social network for teaching and learning

In my opinion, social media...	Frequency and Percentage					Mean
	SD f %	D f %	N f %	A f %	SA f %	
Increases student motivation and engagement with course material.	1	3	19	44	61	4.26
	0.78	2.34	14.84	34.38	47.66	
Increases student-to-student collaboration.	2	3	14	41	68	4.33
	1.56	2.34	10.94	32.03	53.13	
Enhances interaction between the student and the teacher.	1	5	15	44	63	4.27
	0.78	3.91	11.72	34.38	49.22	
Accelerates data and information sharing.	1	4	10	41	72	4.40
	0.78	3.13	7.81	32.03	56.25	
Removes barriers to self-expression and contribution.	0	6	18	42	62	4.25
	0	5	14	33	48	

(Continued)

Table 2. Students' perception of using social network for teaching and learning *(Continued)*

In my opinion, social media...	Frequency and Percentage					Mean
	SD f %	D f %	N f %	A f %	SA f %	
Provides students with 21st Century skills which could aid their employability and increase levels of satisfaction.	1	3	9	40	75	4.45
	0.78	2.34	7.03	31.25	58.59	
Increases the possibilities of adapting inappropriate social behaviour.	2	5	21	43	57	4.16
	1.56	3.91	16.41	33.59	44.53	
If used officially, have a major impact on my ability to access content, resources, and materials for my class.	2	5	19	46	56	4.16
	1.56	3.91	14.84	35.94	43.75	
If used officially, social media could have a major impact on my ability to share ideas with my friends and lecturers.	0	5	12	45	66	4.34
	0	4	9	35	52	
If used officially, could have a major impact on educational partners abilities to interact with each other.	1	5	17	41	64	4.27
	0.78	3.91	13.28	32.03	50.00	

Note: SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree.

The findings above show that most students agreed that social networks can be applied for teaching and learning purposes. However, some of them hold the perception that social media is not suitable for education. Many students agree that social media can increase their motivation, engagement, and collaboration with friends. It also accelerates their ability to share data and information with others. They concur that social media can equip students with 21st-century skills.

The findings above illuminate the diverse spectrum of students' perspectives on the incorporation of social networks into teaching and learning, supported by research such as [15]. While a significant number of students express agreement that social media can be effectively applied for educational purposes [16], it is crucial to acknowledge the existence of a subset that remains skeptical about its suitability in an academic context. The positive aspects highlighted by the majority include increased motivation, enhanced engagement, improved collaboration with peers, and the accelerated ability to share data and information [16]. Moreover, the consensus among students that social media can equip them with essential 21st-century skills [17] underscores its potential significance in modern education.

In examining these outcomes, it becomes evident that the benefits extend beyond the immediate classroom context. The positive impact on motivation and collaboration suggests that social media can contribute to a more dynamic and participatory learning environment. However, the subset of students expressing reservations necessitates a nuanced approach. To fully leverage the advantages of social networks as educational tools, it is imperative for educators and institutions to address concerns and tailor strategies that accommodate diverse learning preferences and needs. This requires a thoughtful integration that not only capitalizes on the recognized benefits but also addresses potential drawbacks and ensures an inclusive educational experience.

The findings presented in the study indicate a noteworthy perspective among students regarding the integration of social networks in the realm of teaching and learning [18]. A substantial majority of students expressed their agreement that social networks can serve as valuable tools for educational purposes. This concurrence signifies a growing recognition of the potential benefits that social media

platforms can offer in the educational landscape. The recognition of the applicability of social networks in education is an encouraging sign, as it suggests a willingness among students to explore innovative approaches to learning.

In conclusion, the findings of this study offer a multifaceted view of students' perceptions regarding the incorporation of social networks into teaching and learning. While a majority of students see the potential benefits, there is a subset that remains cautious. The positive impacts on motivation, engagement, collaboration, information sharing, and skill development present a compelling case for educators and institutions to carefully consider the integration of social media into their pedagogical approaches. However, addressing concerns and tailoring strategies to accommodate different learning preferences and needs will be essential in realizing the full potential of social networks as educational tools.

4.2 Activities in social media that enhance students' critical thinking

This section B consist of 9 items in the questionnaire asking about the activities conducted on social media as a supportive teaching platform in the class. The findings are presented in Table 3 below.

Table 3. Activities in social media that enhance students' critical thinking

In the semesters when my classes were conducted via the social media platform,	Frequency and Percentage					Mean
	SD f %	D f %	N f %	A f %	SA f %	
I successfully offer ways to recombine the views created during class discussion of cases and of current events to form new perspectives or new ideas, different from those offered by the original views.	1	4	29	56	38	3.98
	0.78	3.13	22.66	43.75	29.69	
I help the class break down case or current events material into its constituent parts so that its structure may be understood and its important issues may be emphasized.	0	5	32	58	33	3.93
	0	4	25	45	26	
When a classmate offers her or his view on aspects of cases discussed in class, I expand the class discussion by elaborating on her or his perspective.	1	2	27	62	36	4.02
	0.78	1.56	21.09	48.44	28.13	
When the instructor offers a view on aspects of a case discussed in class, I expand the class discussion by elaborating on this view.	0	8	32	55	33	3.88
	0	6.0	25.0	43.0	26.0	
I steer class discussion toward the use of data, principles, and theory learned to answer a question or shed light on an issue in a new context.	0	5	35	58	30	3.88
	0	4	27	45	23	
I offer my recollection of previously learned material to my colleagues in class to enhance class discussion. This may involve recall of specific facts or of complete theories.	1	4	26	63	34	3.98
	0.78	3.13	20.31	49.22	26.56	
I bring outside ideas, from other classes or the news, into the discussion.	0	3	21	63	41	4.11
	0	2	16	49	32	
I generate new ideas and perspectives that have yet to be brought up Educational Centres.	1	4	28	53	52	4.00
	0.78	3.13	21.88	41.41	40.63	
I expand or provide support for an idea someone else has already made not related to study.	0	2	25	56	45	4.13
	0	1.56	19.53	43.75	35.16	

Note: SD = Strongly Disagree, D = Disagree, N = Neutral, A = Agree, SA = Strongly Agree.

The above findings revealed that students slightly agree that the activities conducted via social media can enhance critical thinking. This indicate that students use social media platforms to engage in discussions with friends, share materials with peers, and utilize this platform for various activities outside of class hours. Students are free to collaborate using this medium in their teaching and learning processes.

These observations align with previous research indicating the multifaceted role that social media plays in modern education. Studies by [18] and [19] have similarly highlighted the increasing integration of social media platforms for both academic and social interactions among students, fostering a dynamic and participatory learning environment. In conclusion, the findings above suggest that students demonstrated a modest level of agreement with the activities conducted through social media. This implies that students actively employ social media platforms to facilitate discussions with peers, exchange learning materials, and engage in a diverse array of activities beyond regular class hours. Moreover, these platforms serve as a versatile tool for collaborative endeavors, enabling students to freely collaborate in their educational processes.

In conclusion, the comprehensive exploration of students' perceptions on the integration of social media in teaching and learning, informed by a diverse range of literature, reveals both the potential benefits and existing reservations. The positive impacts on motivation, engagement, collaboration, information sharing, and skill development present a compelling case for educators and institutions to carefully consider the integration of social media into their pedagogical approaches. Recently, the study concluded by [20] stated that social media can promote knowledge sharing and can increase student motivation and performance. However, the study underscores the necessity for a nuanced approach that addresses concerns and tailors strategies to accommodate different learning preferences and needs. Continuous professional development for educators is essential to harness the full potential of social networks as educational tools and navigate the evolving landscape of technology in education.

4.3 Significance of gender, age, and university program on students' perception of social media for teaching and learning

To predict the significance of gender, age, and university program on students' perception of social media for teaching and learning, multiple regression was used to answer this objective. The result shown in Table 4 below.

Table 4. Regression analysis

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9.395	3	2.349	3.477	.010[b]
	Residual	83.097	123	.676		
	Total	92.492	127			

Based on the table above, the sig. value was 0.01 ($p < 0.05$). Thus, the demographic factors such as gender, age, and university program significantly predicted the perception of social media for teaching and learning. This statistical significance

indicates that these demographic factors have a notable predictive relationship with the perception of using social media for teaching and learning purposes.

This finding aligns with previous research conducted by [4], who similarly reported that demographic factors play a significant role in shaping students' attitudes toward technology adoption in education. Moreover, a study by [21] highlighted that demographic variables can influence students' perceptions of the effectiveness of technology-enhanced learning methods. In practical terms, these findings imply that educators and institutions should consider the diversity of their student body when designing and implementing strategies involving social media for teaching and learning. By recognizing the impact of demographic factors, such as gender, age, and university program, educators can tailor their approaches to accommodate different preferences, expectations, and levels of familiarity with social media platforms. Furthermore, institutions may benefit from providing targeted support and training to particular groups to enhance their engagement and utilization of social media tools in education.

Therefore, the regression analysis results provide robust evidence that demographic factors—gender, age, and university program—significantly influence students' perceptions of using social media for teaching and learning. These findings contribute to a deeper understanding of how individual characteristics can shape attitudes and behaviour in educational technology adoption, emphasizing the importance of inclusive and tailored approaches to fostering effective technology-enhanced learning experiences.

4.4 Significance of gender, age, and university program on the activities in social media that enhance students' critical thinking

To predict the significance of gender, age, and university program on the activities in social media that enhance students' critical thinking multiple regression was used to answer this objective. The result shown in Table 5 below.

Table 5. Regression analysis

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.060	3	.015	.022	.999[b]
	Residual	84.307	123	.685		
	Total	84.367	127			

Based on table above, the sig. value was 0.999 ($p > 0.05$). Thus, the demographic factor gender, age, and university program was not significantly predicting the activities in social media that enhance students' critical thinking. This lack of statistical significance indicates that these demographic factors do not have a substantial predictive relationship with the activities conducted in social media to increase students' critical thinking.

This finding is consistent with the results of a study conducted by [3], which similarly concluded that demographic factors such as gender, age, and academic program did not significantly influence students' engagement in critical thinking activities on online platforms. Furthermore, research by [22] found that demographic characteristics had limited impact on students' participation in online discussions designed to foster critical thinking.

Practically, these results suggest that while demographic factors can play a role in various educational outcomes, they may not strongly determine students' engagement in critical thinking activities on social media. Educators and institutions aiming to promote critical thinking through social media should focus on instructional design, content relevance, and interaction strategies that resonate with a wide range of students. In conclusion, the regression analysis reveals those demographic factors—gender, age, and university program—do not significantly predict students' engagement in activities on social media that enhance critical thinking skills. This highlights the importance of considering a holistic set of factors when designing interventions to stimulate critical thinking through online platforms.

5 CONCLUSION

In summary, the research findings demonstrate that the demographic factors of gender, age, and university program play a significant role in predicting students' perceptions of using social media for teaching and learning. The statistical significance observed underscores a meaningful predictive connection between these demographic variables and how students perceive the applicability of social media in educational contexts. This insight emphasizes the importance of considering demographic characteristics when designing strategies for integrating social media into teaching and learning practices, as these factors appear to significantly shape students' perceptions and attitudes towards using these platforms for educational purposes.

Besides, the investigation into the demographic factors of gender, age, and university program revealed that these variables do not significantly predict the activities within social media platforms that contribute to enhancing students' critical thinking skills. The absence of statistical significance underscores that these demographic factors do not play a substantial role in forecasting the specific activities on social media that foster an increase in students' critical thinking abilities. This finding highlights the need to explore other influencing factors beyond demographics that may have a more pronounced impact on students' engagement in critical thinking-enhancing activities on social media platforms.

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