



Progress in Computers and Learning

Journal homepage:
<https://karyailham.com.my/index.php/picl>
ISSN: 3083-8894



Facebook as a Pedagogical Tool in Fostering Students' Critical Thinking Skills

Jamaliah Abdul Majid^{1,*}, Robiah Abu Bakar¹

¹ Tunku Puteri Intan Safinaz School of Accountancy (TISSA), Universiti Utara Malaysia, Sintok, Kedah, Malaysia

ARTICLE INFO

Article history:

Received 17 February 2025

Received in revised form 19 March 2025

Accepted 21 April 2025

Available online 31 May 2025

Keywords:

Critical thinking skills; educational tool;
Facebook; higher education; social
networking sites

ABSTRACT

This study examines whether the implementation of Facebook as a pedagogical tool enhances critical thinking skills among final year accounting students who enrolled in financial statement analysis course. A Facebook group was set up and students were encouraged students to use the Facebook group as a platform to discuss and share resources relating to their group project. The critical thinking skills is analysed based on students' achievement in addressing the group project, which is assessed using a rubric for critical thinking skills. The study finds that the use of the Facebook group fosters critical thinking skills among students with the Facebook group (the experimental group) as compared to students without the Facebook group (the control group). These findings are noteworthy since final year accounting students are struggling with critical thinking skills, yet it is an essential skill for accounting professionals. The results of this study is hoped to encourage educators in the digital age to make use of social media as a technology-enhanced learning environment for the benefits of students.

1. Introduction

The emphasis on the acquisition of critical thinking skills among students at higher institutions, as underlined by various authorities including the Malaysian Qualifications Agency and the accounting professionals worldwide [21,30], indicates the importance of the soft skills for students to equip with prior to entering the employment [9,27]. Yet, prior studies, such as Young *et al.*, [30] and Huff [14] showed that students are struggling with this essential skill. For example, Huff [14] reported that even though accounting students managed to apply specific analytical techniques to individual accounting calculations, they are unable to see the "big picture", as they fail to see how their calculation connect to the operation of the entire company.

To enhance critical thinking skills, educators need to restructure accounting principles course by re-thinking the pedagogy, classroom environment and testing methodologies. The 'on rote' learning that rely exclusively on lectures and problem solving by the instructor on the white board often promotes passive learning that focus on memorisation and one-right-answer syndrome [30]. This is

* Corresponding author.

E-mail address: jamaliah@uum.edu.my

<https://doi.org/10.37934/picl.3.1.19>

because knowledge and cognitive processes are built through active interactions among students and teachers, and not deposited by teachers to students [8]. Hence, the cultivation of the critical thinking skills warrants innovations in the teaching approach and active learning styles [29,30].

To foster critical thinking skills among final year accounting students, the present study applies Facebook as a pedagogical tool in teaching and learning Financial Statement Analysis course. A group project was given to students to stimulate their critical thinking skills. The approach of integrating Facebook into the students' learnings process is in line with the emphasis of the Malaysian Ministry of Higher Education in using Information, Communication and Technology (ICT) as a teaching and learning tool in the education system [4,24,31]. Accordingly, the present study aims to examine the impact of using Facebook as a pedagogical tool in stimulating students' critical thinking skills.

2. Literature Review

2.1 Critical Thinking Skills

There are numerous definitions of critical thinking found in the literature [17,30]. For example, Kurfiss [19] defines critical thinking as "an investigation whose purpose is to explore a situation, phenomenon, question, or problem to arrive at a hypothesis or conclusion about it that integrates all available information and that can therefore be convincingly justified". According to Kurfiss [19], regardless of any disciplines, critical thinking involves two phases, that is, discovery and justification of ideas. The discovery phase entails identifying patterns and developing interpretations about the evidence collected [18,19]. The justification phase requires one to set forth conclusions, reasoning, and evidence in an argument [18,19]. From the perspective of accounting professionals, the American Institute of Certified Public Accountants (AICPA) in its Core Competency Framework defines critical thinking skills as "the ability to link data, knowledge, and insight together from various disciplines to provide information for decision making" [2,30].

For critical thinking skills to be applied effectively, students must have high level of engagement with their study. Astin [3] defined students' engagement as "the amount of physical and psychological energy that the student devotes to the academic experience". The students' engagement is categorised into three types, namely, behavioural, emotional, and cognitive [13]. The behavioural engagement represents the degree of students' involvement in the learning activities, such as through class participation and interaction with others [13,26]. The emotional engagement is students' affective reactions toward learning, such as their attitudes and interests to learning [13,26]. The cognitive engagement deals with the extent of students' investment in the learning and mental effort in comprehending the content, such as, deep processing of information through critical thinking [26]. Thus, for students to have high engagement with their learnings, they must possess these three types of engagement.

It makes sense to make use of Facebook as an educational tool in enhancing students' engagement and stimulating their critical thinking skills for several reasons. First, despite a number of recent social networking sites, Facebook remains to be a popular choice among younger internet users [10]. For example, Junco [16] reported that between 85% and 99% of college students make use of Facebook for their social interactions. One of the reasons for using Facebook for educational purposes is due to the perceived ease of use of the Facebook [25].

Second, Facebook intends to be an engaging platform [16]. On average, a Facebook user has 130 friends and spends approximately 55 minutes on Facebook in a day [23]. Thus, Facebook may act as a platform that caters for students' needs [6]. Most importantly, Facebook has the potential for teaching and learnings, as it has structures that allow users to share a large amount of information [11].

Third, Facebook allows students to feel more comfortable in expressing themselves and interacting with peers and lecturers [1]. Thus, students who are shy may not feel the fear of embarrassment in face-to-face interaction [20]. At the same time, Facebook allows all students to view the other feedbacks, which enhance transparency and encourage the sharing of information. For example, students may post past year questions and share lesson plans on Facebook [1]. Moreover, with Facebook being incorporated into the formal learnings, students are held accountable for their social media interaction. Thus, by facilitating participation and collaborations among users, Facebook has the potential to be a useful educational tool [22].

In line with the various potential benefits for using Facebook for educational purposes, as discussed above, this study expects the implementation of Facebook group resulted in an enhancement in students' critical thinking skills, as follows:

H₁: There is a positive association between Facebook usage and students' critical thinking skills.

3. Research Method

To undertake this study, a private Facebook group (see Figure 1) was set up and students were encouraged to use the Facebook group as a platform to discuss and share resources relating to their group project. Participants of this research include two groups of students, i.e., the experimental group and the control group. Students in the experimental group are encouraged to use Facebook group in the classroom and outside of the classroom when discussing their group project. Meanwhile, students in the control group, who took Financial statement analysis course in the previous semesters do not have any exposure to the Facebook group in their group project, as the Facebook was created in Semester 1, 2019 when teaching the experimental group.



Fig. 1. A Facebook group for the Financial Statement Analysis course

Students in both the experimental and control groups were final year accounting students taking Financial statement analysis course at Tunku Puteri Intan Safinaz School of Accountancy, Universiti Utara Malaysia, Malaysia. The experimental group consists of 53 students who took the Financial statement analysis course in Semester 1, 2019 (A191). Meanwhile, the control group of students took

the same course and with the same lecturer in the previous two semesters (i.e., semester 1, 2018 (A181) and semester 2, 2018 (A182)). This group consists of 146 students of which 68 students were in Semester 1, 2018 and 78 students were in Semester 2, 2018.

As noted earlier, the objective of this study is to examine whether the implementation of Facebook as a pedagogical tool enhances students' critical thinking skills. Hence, it is hypothesised that there is a positive association between Facebook usage and students' critical thinking skills. The Facebook usage represents students' responses to the postings related to the group project made on the Facebook group. It is measured based on three categories of responses, namely, (1) seen, (2) like, and (3) comments. Hence, to test the hypothesis, Facebook usage is a categorical variable that include the three categories.

Meanwhile, the research instrument that is employed for the critical thinking skills is the group project, which is assessed using rubric for critical thinking skills. According to Kern [17], group activities stimulate critical thinking skills, as it encourages students to discuss divergent views. The group project required students to conduct profitability and risk analyses of firms listed on the Bursa Malaysia using financial ratios. Huffman *et al.*, [15] and Kern [17] assessed critical thinking skills based on three components, i.e., affective, cognitive, and behavioural. Following these prior studies, the group project was designed to incorporate these three components, as follows:

- I. Affective component, e.g., ambiguity of conflicting information that financial ratios can give.
- II. Cognitive component, e.g., students' developing opinions about how well their listed firms are performing.
- III. Behavioral component, e.g., computing and analyzing financial ratios for a firm after a classroom example of a different firm.

(Source: Huffman *et al.*, [15] and Kern [17])

Using these three components, the group project required students to select five companies listed on the Bursa Malaysia, identify the relevant financial ratios, conduct profitability and risk analyses of these companies, and choose the best company to invest. The group project is assessed using rubric for critical thinking skills, which comprises five criteria. These criteria assess students' ability to: (i) identify the main issue (ii) analyse the issue (iii) generate ideas and strategies in solving the issue, (iv) think beyond boundaries in analysing and discussing strategies in solving the issue, and (v) make well-informed decision on the best company to invest.

Students are encouraged to use the Facebook group to communicate issues concerning their group project. They are also advised to upload photos and relevant minute of meeting when conducting group meeting outside the class. At the end of the semester, students from the experimental group were required to submit a self-reflection report. Guidelines for students to produce the self-reflection report is adopted with modification from Tonge and Willet [28]. When the first group of students upload their photos showing that it has commenced the project, the lecturers will reward them to encourage other groups who have not start to follow suit. Thus, this activity aims to encourage students to start the project earlier and hence to enhance their engagement with the group project. In addition, once the students are engaged with the group project, they are required to communicate issues encounter via the Facebook group. Instead of solving the issues for the students, the lecturers will encourage the students to further explore the annual reports of the selected company to address the issues on their own. Hence, the students will be steered to analyse the issue at a much deeper level, which will foster their critical thinking skills. At the same time, the lecturers will pose open-ended questions that are directly related to the issues

for students to discuss in the Facebook group and to further address in the group project. The open-ended questions aim to encourage students' interaction on the Facebook group and hence to enhance their critical thinking skills.

4. Results and Discussion

To examine whether the implementation of Facebook for educational purposes stimulates students' critical thinking skills, this study compared the results of the critical thinking skills derived from the group project between the experimental group and the control group. At the same time, this study controls for the students' prior semester CGPA ($CGPA_{prior}$), gender and ethnicity. This study employed two approaches in addressing this research objective. First, this study analysed the impact of using Facebook on the critical thinking skills by focusing solely on the experimental group of students. Second, the study examined similar impact by comparing students in the experimental group with the control group.

Figure 2 shows that the experimental group is dominated by female students (46 students from the total of 53 students). Meanwhile for the ethnicity, students in the experimental group is quite diverse with 21 Bumiputera students, 17 Chinese students, 14 Indian students and one International student.

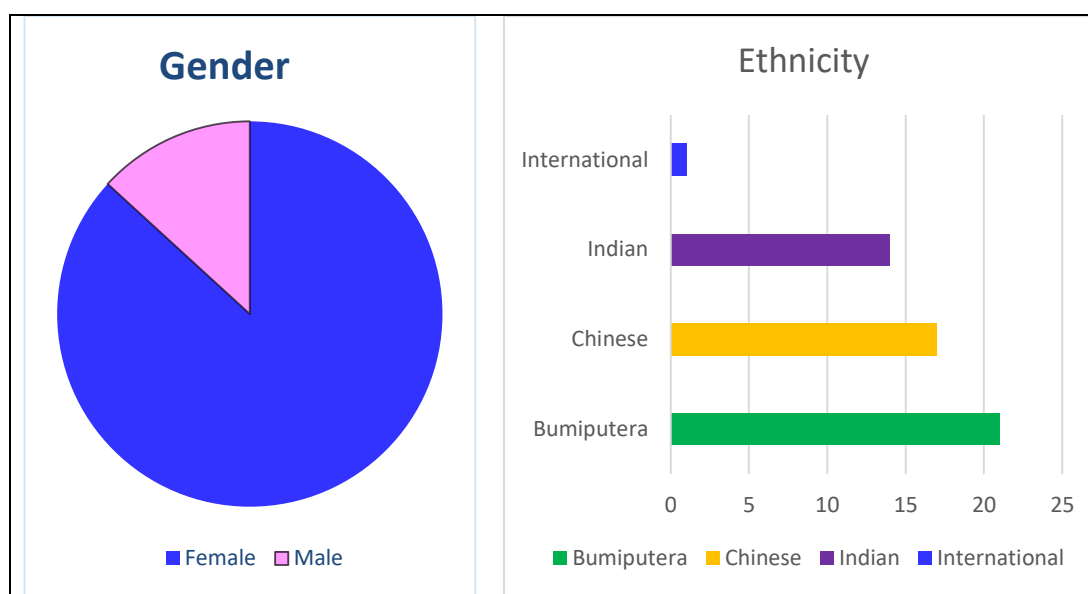


Fig. 2. Composition of students in the experimental group

This study analysed the impact of using Facebook on the students' critical thinking skills for the experimental group by performing Pearson correlation coefficients. The results (see Table 1) show no significant correlation between the frequency of Facebook usage and the results of the critical thinking skills among the students. Rather, the results show that the critical thinking skills is positively associated with the results of the previous CGPA obtained by students. These results suggest that within the experimental group of students, their responses toward Facebook learning activities have no impact on their critical thinking skills.

Table 1

Pearson correlation coefficients

Variable	1	2	3	4	5
1 Critical_Thinking_Skills	1.00				
2 FB_Usage	0.05	1.00			
3 CGPA _{prior}	0.29*	0.19	1.00		

Critical_Thinking_Skills = results of the critical thinking skills; Facebook_Usage = the frequency of responses made by students toward the posting on the Facebook group; CGPA_{prior} = results of prior semester cumulative grade point average. * and ** denote significant at the at 1% and 5% level, respectively.

Next, this study examined the impact of using Facebook, as part of teaching and learning on students' critical thinking skills by comparing the results of the experimental group with the control group. The results (see Table 2, panel A) shows that students in the experimental group scored higher for the Critical_Thinking_Skills (with a mean of 17.55 and a median of 17.60) than that of students in the control group (with a mean of 11.20 and a median of 10.00) and it is strongly significant (see panel B). Thus, the hypothesis (H_1) that the implementation of Facebook group resulted in an enhancement in students' critical thinking skills is supported.

With regard to other factors that may influence students' critical thinking skills, the results (see Table 2, panel A) show that students in the experimental group have better CGPA in the prior semester as compared to the control group and it is strongly significant (see panel B). In addition, the composition of students' ethnicity in the experimental group differs significantly from the control group (see Table 2, panel C). The experimental group are more diverse on the ethnicity of the students than that of the control group. Overall, the results of this study suggest that the educational use of Facebook for the Financial statement analysis course fosters critical thinking skills among students with the Facebook group (the experimental group) as compared to students without the Facebook group (the control group).

Table 2

Comparison of results between the experimental group and the control group

Variable	Experimental Group (EG)	Control Group (CG)		
Panel A	Mean	Median	Mean	Median
Critical_Thinking_Skills	17.55	17.60	11.20	10.00
Facebook_Usage	10.57	10.00	0.00	0.00
CGPA _{prior}	3.48	3.54	3.23	3.32
Variable	All observations		Test of differences (EG vs. CG)	
	Mean	Median	Mean p value	Median p value
Panel B				
Critical_Thinking_Skills	12.90	13.00	0.00	0.00
Facebook_Usage	2.81	0.00	0.00	0.00
CGPA _{prior}	3.30	3.40	0.03	0.02
Panel C	Number of students		Chi-square test of independence (Experimental group vs. Control group)	
	Experimental group	Control group	Value	Sig. (2-tailed)
Gender				
Female	46	116		
Male	7	30		
Total	53	146	1.384	0.239
Ethnicity				
Bumiputera	93	21		
Chinese	41	17		
Indian	10	14		
International	2	1		
Total	146	53	16.559	0.001

Critical_Thinking_Skills = results of the critical thinking skills; Facebook_Usage = the frequency of responses made by students toward the posting on the Facebook group; CGPA_{prior} = results of prior semester cumulative grade point average; Gender = a binary variable set to 0 for female and 1 for male students; Ethnicity = a categorical variable with four categories, i.e., 1 – Bumiputera, 2– Chinese, 3 – Indian, and 4 – International students. * and ** denote significant at the at 1% and 5% level, respectively.

5. Conclusion

Facebook, like many other social networking sites, could distracts students from their academic tasks, especially when use excessively for entertainment and social activities [5,12]. Alternatively, it could act as a platform that caters for students' needs and improves their learning experience through improved interactions, collaboration, and resource sharing [6,7,22,25]. Since Facebook has gained popularity among younger internet users, this study made use of Facebook as a technology-enhanced learning environment in financial statement analysis course.

In doing so, this study finds that the educational use of Facebook fosters students' critical thinking skills, especially for students with the Facebook group (the experimental group) as compared to students without the Facebook group (the control group). These findings are noteworthy since final year accounting students are struggling with critical thinking skills, yet it is an essential skill for accounting professionals. Thus, this study contributes to the literature by providing empirical evidence on the effectiveness of using Facebook as an educational tool in stimulating critical thinking skills among final year accounting students, which has received limited attention in prior studies.

In sum, the conclusion that can be drawn from this study is that since we are living in the digital era, educators need to make use of the advancement in communication technology to guide students in their learning process rather than letting them drifting away from their academic commitment. Thus, the information obtained from this study is hoped to encourage educators in the digital age to incorporate other types of ICT in their teaching strategies for the benefit of the students.

Acknowledgement

The authors would like to acknowledge the financial support for this research from the University Teaching and Learning Centre (UTLC), Universiti Utara Malaysia via the Scholarship of Teaching and Learning (SOTL) grant (S/O code 14517).

References

- [1] Ainin, Sulaiman, M. Muzamil Naqshbandi, Sedigheh Moghavvemi, and Noor Ismawati Jaafar. "Facebook usage, socialization and academic performance." *Computers & Education* 83 (2015): 64-73. <https://doi.org/10.1016/j.compedu.2014.12.018>
- [2] American Institute of Certified Public Accountants (AICPA). (1999). Broad business perspective competencies.
- [3] Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel*, 25, 297-308.
- [4] Malecela, Issa Omar. "Integrating computer-related technology into instructional practice at a higher learning institution in Malaysia." *IJUM Journal of Educational Studies* 5, no. 1 (2017): 76-92. <https://doi.org/10.31436/ijes.v5i1.152>
- [5] Busalim, Abdelsalam H., Maslin Masrom, and Wan Normeza Binti Wan Zakaria. "The impact of Facebook addiction and self-esteem on students' academic performance: A multi-group analysis." *Computers & Education* 142 (2019): 103651. <https://doi.org/10.1016/j.compedu.2019.103651>
- [6] Datu, Jesus Alfonso D., Weipeng Yang, Jana Patricia M. Valdez, and Samuel Kai Wah Chu. "Is facebook involvement associated with academic engagement among Filipino university students? A cross-sectional study." *Computers & Education* 125 (2018): 246-253. <https://doi.org/10.1016/j.compedu.2018.06.010>
- [7] Demir, Mehmet. "Developing a scale for using Facebook as a learning tool." *Educational Technology Research and Development* 66, no. 6 (2018): 1457-1477. <https://doi.org/10.1007/s11423-018-9616-8>
- [8] DeWaele, Scott A. "Critical thinking, questioning and student engagement in Korean university English courses." *Linguistics and Education* 32 (2015): 131-147. <https://doi.org/10.1016/j.linged.2015.10.003>
- [9] Disparte, D. (2018). Facebook and the tyranny of monthly active users. *Forbes*.
- [10] Dyson, Benjamin, Kristin Vickers, John Turtle, Sara Cowan, and Adrianna Tassone. "Evaluating the use of Facebook to increase student engagement and understanding in lecture-based classes." *Higher Education* 69 (2015): 303-313. <https://doi.org/10.1007/s10734-014-9776-3>
- [11] Efendioğlu, Akin. "Teachers' use of Facebook and teacher quality: developing a 'Facebook Effect Scale on Teacher Quality (FESTQ)' from the perspective of PCK, TPACK, and lifelong learning frameworks." *Educational Technology Research and Development* 66, no. 6 (2018): 1359-1385. <https://doi.org/10.1007/s11423-018-9586-x>
- [12] Feng, Shihui, Yip Kan Wong, Lai Yin Wong, and Liaquat Hossain. "The Internet and Facebook usage on academic distraction of college students." *Computers & Education* 134 (2019): 41-49. <https://doi.org/10.1016/j.compedu.2019.02.005>
- [13] Fredricks, Jennifer A., Phyllis C. Blumenfeld, and Alison H. Paris. "School engagement: Potential of the concept, state of the evidence." *Review of educational research* 74, no. 1 (2004): 59-109. <https://doi.org/10.3102/00346543074001059>
- [14] Huff, Patricia Lee. "The goal project: A group assignment to encourage creative thinking, leadership abilities and communication skills." *Accounting Education* 23, no. 6 (2014): 582-594. <https://doi.org/10.1080/09639284.2014.974198>
- [15] Huffman, K., Vernoy, M., Williams, B., and Vernoy, J. (1991). *Psychology in action*. New York: Wiley.
- [16] Junco, Reynol. "The relationship between frequency of Facebook use, participation in Facebook activities, and student engagement." *Computers & education* 58, no. 1 (2012): 162-171. <https://doi.org/10.1016/j.compedu.2011.08.004>
- [17] Kern, Beth B. "Structuring financial statement analysis projects to enhance critical thinking skills development." *Journal of accounting education* 18, no. 4 (2000): 341-353. [https://doi.org/10.1016/S0748-5751\(01\)00005-7](https://doi.org/10.1016/S0748-5751(01)00005-7)

- [18] Kimmel, Paul. "A framework for incorporating critical thinking into accounting education." *Journal of accounting education* 13, no. 3 (1995): 299-318. [https://doi.org/10.1016/0748-5751\(95\)00012-B](https://doi.org/10.1016/0748-5751(95)00012-B)
- [19] Kurfiss, Joanne Gainen. *Critical Thinking: Theory, Research, Practice, and Possibilities*. ASHE-ERIC Higher Education Report No. 2, 1988. ASHE-ERIC Higher Education Reports, The George Washington University, One Dupont Circle, Suite 630, Dept. RC, Washington, DC 20036-1183, 1988.
- [20] Leary, Mark R., and Robin M. Kowalski. "The interaction anxiousness scale: Construct and criterion-related validity." *Journal of personality assessment* 61, no. 1 (1993): 136-146. https://doi.org/10.1207/s15327752jpa6101_10
- [21] Malaysian Qualifications Agency (MQA) (2014). Programme standards: Business studies.
- [22] Mazman, Sacide Güzin, and Yasemin Koçak Usluel. "Modeling educational usage of Facebook." *Computers & Education* 55, no. 2 (2010): 444-453. <https://doi.org/10.1016/j.compedu.2010.02.008>
- [23] McEwan, Bree. "Hybrid engagement: How Facebook helps and hinders students' social integration." In *Higher education administration with social media*, vol. 2, pp. 3-23. Emerald Group Publishing Limited, 2011.
- [24] Ministry of Education Malaysia. (2013). Malaysia Education Blueprint 2013 - 2025. Putrajaya: Kementerian Pendidikan Malaysia.
- [25] Sánchez, R. Arteaga, Virginia Cortijo, and Uzma Javed. "Students' perceptions of Facebook for academic purposes." *Computers & Education* 70 (2014): 138-149. <https://doi.org/10.1016/j.compedu.2013.08.012>
- [26] Schindler, Laura A., Gary J. Burkholder, Osama A. Morad, and Craig Marsh. "Computer-based technology and student engagement: a critical review of the literature." *International journal of educational technology in higher education* 14 (2017): 1-28. <https://doi.org/10.1186/s41239-017-0063-0>
- [27] Statista. (2020). Most popular social networks worldwide as of July 2020, ranked by number of active users.
- [28] Tonge, Richard, and Caroline Willett. "Learning to think: Using coursework to develop higher-order academic and practitioner skills among final year accounting students." *Accounting Education* 18, no. 2 (2009): 207-226. <https://doi.org/10.1080/09639280802436947>
- [29] Williams, D. Z. (1993). Reforming accounting education. *Journal of Accountancy*, 176(2), 76–81.
- [30] Young, Marilyn, and D. Lee Warren. "Encouraging the development of critical thinking skills in the introductory accounting courses using the challenge problem approach." *Issues in Accounting Education* 26, no. 4 (2011): 859-881. <https://doi.org/10.2308/iace-50065>
- [31] Zulkefli, A. S. (2017). Education Ministry's Padu optimistic 2018 Budget will accelerate education transformation.