

Are Social Networking Sites Suitable for Formal Learning among Business Research Students? A Mixed Method Experimental Approach

Fouzia Hadi Ali* and Aban Abid Qazi**

Abstract

The purpose of the study is to empirically assess the impact of Social Networking Sites (SNS) on the pedagogical outcomes as perceived by the students in the context of post-graduate students. This action research used triangulation approach to assess 80 students of a post-graduate class. Data were collected in six steps. Initially, an adapted questionnaire was administered before and after creating formal Facebook (FB). The group was monitored for three weeks. Finally, 18 students were selected for semi-structured interviews based upon their interaction with the FB group. Data were analyzed using SPSS 16, PLS-SEM 3.2, and NVIVO 11. The results revealed a remarkable impact of SNS-FB on various pedagogical factors. This research can provide the basis for academic policymakers to introduce such formal SNS channels for teaching purposes. The study provides a base to address the new trends of learning through action research that is underexplored in the previous literature.

Keywords: Social networking sites (SNS), Facebook (FB), Pedagogical factors

*Assistant Professor, Hailey College of Commerce, University of the Punjab, Lahore, Pakistan
Email: fozia.hcc@pu.edu.pk

**Research Associate, Hailey College of Banking and Finance, University of the Punjab, Lahore, Pakistan

Introduction

The most remarkable influence of the use of technology can be witnessed among the younger generation nowadays (Woo, Wang, Quek, Yang, & Liu, 2012) and these technologies increase the human interaction through online forums such as Instant messaging and Social Networking Sites (SNS). Moreover, there is a striking increase in the use of different types of social media such as Facebook, Whatsapp, and Viber, etc. Most recently Kemp (2018), indicated that worldwide there are 3.196 billion social network users and the profile of the users regarding age groups and gender reveal that the highest users are males, i.e., 56% and females 44% and fall between the age groups of 18-34 years.

Moreover, as far as the South Asian countries such as Pakistan is concerned, Kemp (2018) revealed that out of a total population of 198.9 million, 18% are active social media users among them 77 % are males while 23% are females. Furthermore, most of the social media users fall between 18-34 years of age. These statistics indicate that there is a difference in the use of various modes of communication amongst youngsters as compared to the older generation.

Therefore, the recent developments in the use of SNS's pose a need for the academicians to revisit the modes of formal teaching. The reason for such a proposition is to develop interest and explore the pedagogical benefits that can be attained by the use of popular SNS's to engage students through the mode of instruction they feel convenient and exciting. Moreover, the study of Varela-Candamio, Novo-Corti, & Barreiro-Gen, (2014) asserts that students like to use SNS in combination with the classroom setting as they perceive that not only their interaction and participation improve but it also influences their academic performance positively. Although some past studies (Huang, Chen, & Huang, 2011; Liao, Huang, Chen, & Huang, 2015) have explored the use of SNS's in educational settings. However, till present, the discussion is limited in scope and only explore the students' perception about the usage of SNS for academic purposes or discusses the factors of the pedagogical factors (i.e., Communication, Collaboration, Resource Material Sharing, Critical thinking, Content Learning and Student-Active Role). Moreover, there is a dearth of literature that affirms a dual (i.e., both quantitative and qualitative) insight towards the effect of the use of SNS as a formal tool and resultantly examines its effect on the pedagogical factors. So the present tries to examine the impact of the effect of the formal usage of social networking sites on the pedagogical factors as perceived by the postgraduate students through a mixed method approach.

Literature Review

Students' perceptions

The prompt expansion in mobile phone devices, Android systems, and availability of Wi-Fi connections has substantially increased the usage of online Social Networking Sites as online communities for learning among younger generations (Huang et al., 2011; Lewis, Pea, & Rosen, 2010).

Therefore, due to the growing trend of communication amongst the students, there is a paradigm shift in the traditional mode of teaching in the classrooms for a new digital oriented generation (Prensky, 2001). This generation is interested in the new ways and techniques to learn in the classroom. So, now the students like to use SNS's for academic purposes too (Lim & Richardson, 2016).

Social networking sites

Various studies show an immense increase in the usage of SNS among the students (Pempek, Yermolayeva, & Calvert, 2009; Ryan, Chester, Rege, & Xenos, 2014). The reason for such an increase can be associated with an escalation in modes of SNS's such as Facebook, Whatsapp, Twitter, Viber, Google+, etc. The reason for such a change can be observed because various modes of SNS's allow users to create online communities with like-minded people and exchange user-generated contents (Kaplan & Haenlein, 2010).

However, while assessing the different types of SNS's not all are regarded as equally essential or favored by the users. Kemp (2018) reports that Facebook (FB) is leading the top position worldwide with 461 million users followed by Whatsapp and Instagram on the second and third position. Furthermore, Osgerby and Rush (2015) also assert that students prefer to use FB for academic purposes. So it is evident from the above comparison that Facebook is the most popular mode of SNS among the younger generation. Therefore, this study focuses FB as the formal medium of teaching and examines the effect of its usage on the pedagogical factors of the post-graduate students.

Facebook as a tool for formal learning

Facebook is a social networking site that provides a platform for people to stay in touch with their family, friends, and co-workers. Initially, Facebook was developed as an Intranet to facilitate communication among the Harvard University students (Cassidy, 2006), but today it has become a leading internet SNS among all the other Social Networking Sites.

Smith (2016) assert that 92% of people like to use Facebook who is between the age of 20-29 years. Considering the age of the students at postgraduate level, they also mostly fall between the age of 20-29 years. So this report confirms the argument of Tang et al. (2016) who posits that students like to use Facebook more as compared to other sites.

Mazman and Usluel (2010), Arquero and Romero-Frías (2011) identified six pedagogical factors (such as communication, collaboration, resource material sharing, promote critical thinking, content learning and students active role) that influence when FB is used for academic purposes. Table 1 below provides a snapshot of the different pedagogical factors.

Table 1

Pedagogical Perspectives

Pedagogical Perspective	Source	Phenomena
Communication	(Mazman & Usluel, 2010)	Class discussions among students, announcements about class, course, assignments and department
Collaboration		Sharing ideas and opinions in a group
Resource Material Sharing		Sharing of course related contents
Content Learning	(Arquero & Romero-Frías, 2011)	Development of technical skills among students
Promote Critical Thinking		Create an ability to evaluate any situation critically
Students Active Role	(Akbari, Böhm, & Schroeder, 2010)	Student-Teacher personal interaction

As shown in Table 1 above, Mazman and Usluel, (2010) identified the first three factors; respectively while Arquero and Romero-Frías identified the last three. In 2013, Manca and Ranieri identified five pedagogical perspectives during a detailed literature review relating to the usage of FB in an academic environment.

However, all the educational purposes of Facebook are separately used in different studies (Bowman & Akcaoglu, 2014; Junco, 2015; Nguyen, 2017; Sánchez, Cortijo, & Javedc, 2014) and therefore there is no empirical evidence available that could collectively examine them as pedagogical factors.

Therefore, based on the previous literature the present study identifies all pedagogical factors and tries to examine the effect of Use of FB as a formal learning tool on the pedagogical factors as perceived by the students. So to test this effect, the following hypothesis is proposed:

H₁: The use of FB for academic purpose significantly influences Pedagogical factors (communication, collaboration, resource material sharing, promote critical thinking, content learning, and students active role) as perceived by the postgraduate students.

Methods

Participants

The objective of this action research was to understand the perceptions of business research students relating to the usage of SNS in an academic environment. For this purpose, 80 M. Phil-Level business research students were selected for the study.

Samples size determination

The population of the study consisted of 100 postgraduate students of business research. The study was a control group setting in which the researcher exposed the participants to different activities and recorded their behaviors. However, since the population was small, the sample size was determined by a thumb rule suggested by (Barclay, Higgins, & Thompson, 1995). They suggested that sample size should be equal to 10 times of the largest formative indicators to tap a single construct, or 10 times the highest number of paths directed towards a single individual construct in the model whichever is greater. Since three constructs consisted of the maximum number of items, i.e., seven items, so a multiple of 10 equals to 70. Whereas, the highest number of a path directed towards a variable was one which equaled to 10. Therefore, a sample size of 70 was considered appropriate.

However, the sample size was also calculated with the application of an online formula freely available (<http://www.surveysystem.com/sscale.htm>) with 95% level of confidence and 5% margin of error. The resultant sample size was 80. Therefore, a sample size of 80 was selected.

Procedures

In this study, data is collected in six steps. Table 2 below shows the details of the entire activity:

Table 2

Planned use of Facebook

Steps	Procedure
First Step	General discussion about the usage of SNS as a formal learning tool.
Second Step	Polling: Asked Students' to vote for the SNS they mostly use.
Third Step	Initial Questionnaire: Adapted a questionnaire and it was administered to the students before the FB activity was initiated.
Fourth Step	Created an FB group with the name of the 'ARM' and activated it for three weeks, The activities performed during the three weeks included: First Week: The instructor shared material relating to what is a research proposal and asked students to share what they understand about a good research proposal. Second Week: The instructor assigned a task to the students to select and share their research proposal topics. The instructor and others in the group gave comments and opinions on the topics shared by the students. Third Week: The instructor shared details relating to all the Contents of a Research Proposal
Fifth Step	After the 3-week activity, the same questionnaire was administered to the same students.
Sixth Step	18 students were selected from whom a semi-structured interview was conducted to explore more dimensions and horizons of the pedagogical factors as at this stage the students were capable of talking knowledgeably.

Measures

The present study used a mixed method approach by applying both quantitative and qualitative techniques. For the quantitative section, questionnaires and observations were used; whereas for the qualitative part, semi-structured interviews were conducted at the end of the activity.

A 64-item questionnaire was administered to tap the students' perceptions relating to the usage of SNS-FB for formal academic purposes and its effect on the six pedagogical factors. Moreover, the items were rated using a five-point Likert scale. The questionnaire was adopted from different sources as described in Table 3 below.

Data analyses

For the analysis of the quantitative portion, SPSS 16.0 and PLS Sem 3.2 were employed. SPSS was used to conduct descriptive analysis, Wilcoxon Signed Rank Test, Spearman Correlational analysis. While to test the hypothesis Smart PLS was used as it is more suitable for small sample size, requires no distributional assumptions and handles constructs measured single and multi-item measures, etc. (Hair, Hult, Ringle, & Sarstedt, 2016). Finally, for the qualitative part, NVIVO 11.0 was used to identify the new dimensions and horizons of the pedagogical factors.

Data Analyses

Quantitative analyses

Several tests were applied to examine the data collected at different stages. The results of the tests are discussed under:

Reliability analysis: Cronbach's alpha for the items was calculated to check the internal consistency of the items. The overall reliability Cronbach's alpha of the instrument was 0.916, and construct-wise reliabilities were higher than 0.70 except for content learning. Table 3 below provides a detail of the construct reliabilities:

Table 3

Reliability Analysis of the usage of SNS-FB for academic purposes and the Pedagogical Factors

Variable	No. of items	Measures	Reliability
Education purpose	9	(Elbeltagi, 2011; Sánchez et al., 2014)	0.738
Communication	6	(Mazman & Usluel, 2010)	0.719
Collaboration	8	(Arquero & Romero-Frías, 2011; Mazman & Usluel, 2010)	0.789
Resource material sharing	2	(Mazman & Usluel, 2010)	0.617
Perceived critical thinking	4		0.743
Content learning	3	(Arquero & Romero-Frías, 2011)	0.687
Student active role	9		0.787

Normality of the data

Kolmogorov-Smirnov Test of Normality was applied to calculate the normality of the data. The results revealed that the data was not normally distributed with a significance p-value < 0.05. Therefore, PLS-SEM was applied to test the hypotheses as it does not require an assumption of normal distribution.

Descriptive results

Initial polling results: 86% students participated in the study, out of which 57 % were males, and 34% were females. Moreover, the results of the polling showed that 51.8% students were using FB and 38.2% were using WhatsApp as described in Figure1 below.

The polling revealed that most of the use FB, so FB was used as a type of SNS to examine the students' perception relating to the usage of SNS for academic purpose.

Respondents usage pattern of SNS: A questionnaire was used to measure the students' perceptions relating to the use of SNS for academic purposes and was administered twice to the same students before and after a formal FB group was created. The response rate was 80%. Results show that 36.3% students use FB since three years and most of the students' use FB on a daily basis (i.e., 41.2%). Normally most of the students (23.5%) spent one hour daily on using SNS.

Week FB activity observations: During the three-week activity, students were categorized into four groups by their interaction in the activity, i.e., Creator, Critic, Collector, and Inactive. The break-up is as under:

Table 4

Categories of students' Interaction

Creators	Creators are those users on the SNS who generate their media outlets, e.g., videos, blogs (1).
Critics	Critics are those users who comment on other posts and participate in discussions (2)
Collectors	Collectors collect the information and material that is created and shared with others (1).
Inactives	Inactives are those users who do not take part in any activity. (2)

[1= (Li & Bernoff, 2008), 2 = (Hsu, 2010)]

The observations in Table 5 below show that in the first week, 60.8% students were identified as critics, then in the second week, the critics reduced to 50% while subsequently, the number of creators increased, and reached 25.5%. Ultimately, in the third week, the ratio of creators reached the highest point, and 90.2% students became creators.

Table 5

Frequency distribution of students' category wise participation

Groups	First Week	Second Week	Third Week
Creators	9.8%	25.5%	90.2%
Critics	60.8%	50%	5.9%
Collectors	2.0%	5.9%	Nil
Inactive	27.5%	18.6%	3.9%

Performance of the students (in scores): After this activity, the students' performance was also examined through a formal assignment. The results revealed that the students who scored high were mostly creators. The following *Figure 1* below shows that the students who scored more than 80% were creators and those who scored between 71-80% were critics.

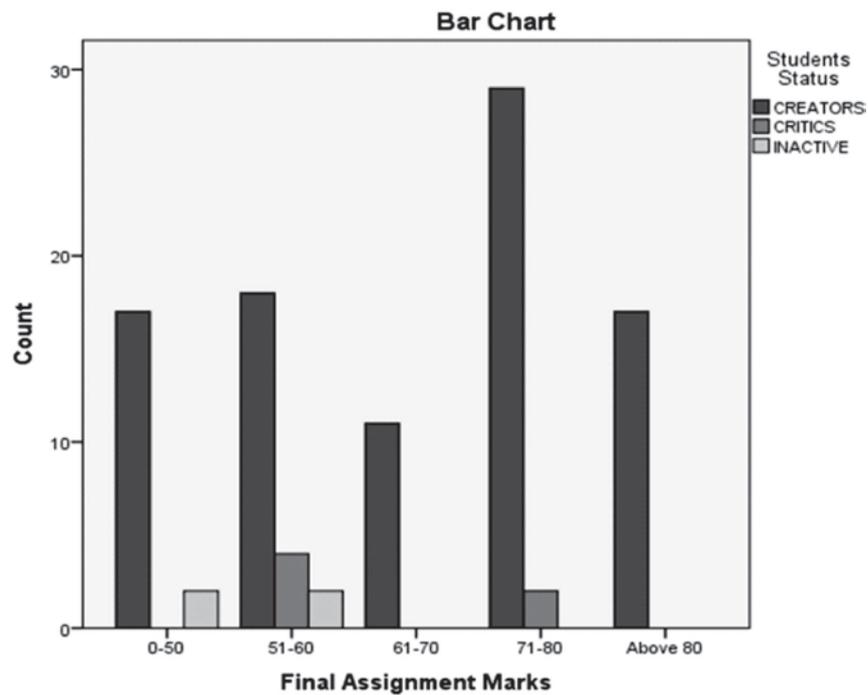


Figure 1 *Performance of Students (in Scores)*

Figure 1 shows that only those students' who actively participated (creators and critics) show excellent performance in the final assignment. Collectors and inactive participants showed average performance in the final assignment.

Pre-Post test results

To assess the difference between the responses of the same students before and after the activity, Wilcoxon Signed Rank Test was applied. The results of the test (Table 6) show a highly significant difference (p -value < 0.01) in the response of students towards content learning (CL) and a significant difference (p -value < 0.05) to communication. In contrast, all the other pedagogical factors showed no difference.

Table 6*Results of Wilcoxon Signed Rank Test*

Pedagogical Factors	Z-Values	p-values
Communication	-2.485	0.013*
Collaboration	-1.768	0.077
Resource Material Sharing	-0.814	0.416
Content Learning	3.489	0.000**
Critical Thinking	-0.571	0.568
Students Active Role	-0.303	0.762

* Significant at 0.05 level of significance

** Significant at 0.01 level of significance

Correlation matrix

Spearman Correlation Analysis was used to examine the relationship among the usage of SNS for educational purposes and pedagogical perspectives. The results reveal that there is a significant and positive correlation between the usage of SNS for educational purpose and all the pedagogical factors.

Table 7*The Correlation Matrix of academic purpose and pedagogical perspective*

Sr. No.	Variables	1	2	3	4	5	6	7
1	Academic Purpose	1						
2	Communication	0.352**	1					
3	Collaboration	0.550**	0.680**	1				
4	Resource Material Sharing	0.548**	0.372**	0.648**	1			
5	Promote Critical Thinking	0.599**	0.595**	0.680**	0.541**	1		
6	Content Learning	0.524**	0.517**	0.587**	0.495**	0.697**	1	
7	Student Active Role	0.584**	0.554**	0.631**	0.570**	0.721**	0.718**	1

** Significant at 0.01 level of significance

Table 7 above shows that all the pedagogical factors, i.e., communication, collaboration, resource material sharing, critical thinking, content learning and students active role have a positive and highly significant relationship with the usage of FB for academic purposes (0.352**, 0.550**, 0.548**, 0.599**, 0.524 and 0.584** respectively).

PLS-SEM results

To test the effect of the usage of SNS for academic purposes on the pedagogical factors, PLS-SEM was applied. A bootstrapping procedure was performed that is a resampling technique that is robust for non-normal data. *Figure 2* below shows the R-Square values and the p-values of the model:

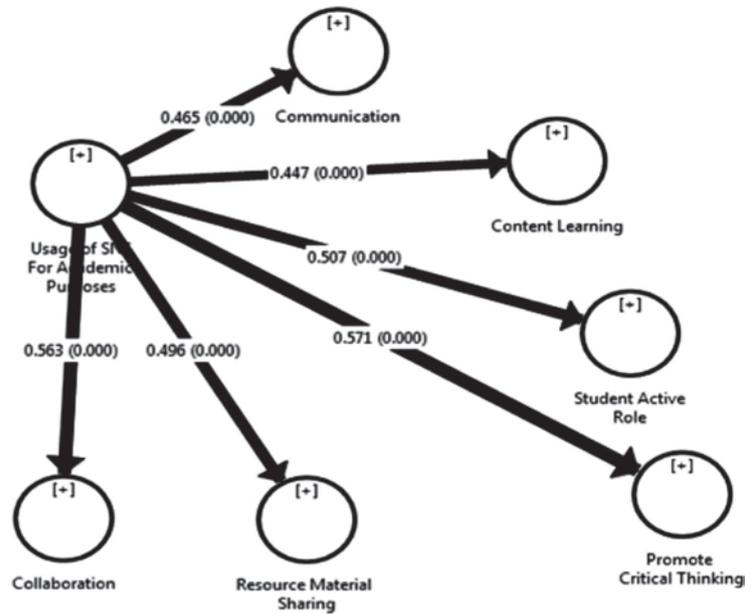


Figure 2 PLS-SEM Model

The above figure shows the adjusted R square and p-values of the model. The results reveal that there is a highly significant positive (p-values < 0.01) effect of Usage of SNS for academic purposes on all the pedagogical factors such as collaboration, resource material sharing, promote critical thinking, student-active role, content learning, and communication.

Qualitative results

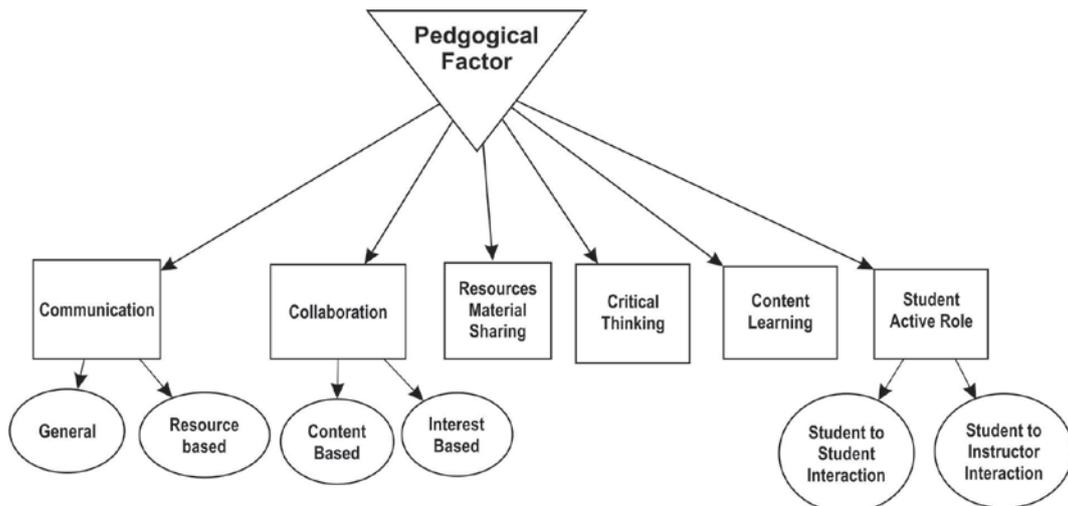


Figure 3 NVIVO 11 Conceptual Map for Emergent Themes of Pedagogical Factors

Figure 3 above shows the six pedagogical perspectives that were collectively analyzed in the current study. The model in *Figure 3* above illustrates further the emergent sub-themes or dimensions that were identified during the qualitative analysis.

Communication is the primary essential element among the pedagogical factors, and the findings of the qualitative analyses reveal that communication among students for the academic purpose is primarily for a general purpose and secondly to share notes assignments, etc.

Collaboration, the second aspect of pedagogical perspective, facilitates the discussion and engagement among the students. Moreover, the qualitative analysis shows that two types of collaboration occur among the students, i.e., content and interest based. Content-based collaboration increases the engagement among the students and facilitates them in problem-solving. On the other hand, interest-based collaboration facilitates students to share their own generated contents with others.

Resource material sharing, facilitate the exchange of related academic material. Critical thinking and content learning both assist students in developing skills. Critical thinking enables students to evaluate any situation, and content learning contributes to enhanced learning among the students relating to a specific discipline. Finally, students active role, facilitate through instructor-student interaction and motivate the students for active participation in the learning process

Discussion, Limitations, and Recommendations

Discussion

The findings of the current study reveal that 58% students actively use Facebook on a daily basis for more than three years. However, 99% of the students had a view that they were never involved in such a formal activity initiated by the instructor before. A questionnaire was administered twice before and after the activity to examine the difference in the perception of students' relating to the pedagogical factors. The results revealed that this group activity enhanced content learning among the students. However, communication was found to decrease as the students had used SNS only for informal communication but when they were exposed to a formal communication activity, they communicated less but interacted only when they had a good idea about what the instructor required from them. Additionally, different categories (i.e., creator, critic, collector and inactive) of the students emerged from the daily observations taken during a 3-week activity. Most importantly, those who were identified as creators performed high in the final assignment too.

The current study confirms the effect of the usage of SNS-FB empirically for academic purposes on the six pedagogical factors, i.e., communication, collaboration, resource material sharing posed by Mazman & Usluel, (2010); and, critical thinking, content learning and student active role identified by Arqueroa & Romero-Fríasb, (2013) in a single model. The empirical results confirm that the academic use of SNS-FB is significantly correlated with the pedagogical factors. The finding also reveals that there is a highly significant effect of the academic use of SNS-FB on all the pedagogical factors extracted from the previous literature. Moreover, the findings of the study also reveal that students interact and collaborate with each other, share information, develop critical thinking that enhances their knowledge and interaction with their peers and instructor. Through this activity, the underlying concept emerges that when students collaborate with others and share their knowledge, it will subsequently enhance their knowledge. Moreover, when others share their opinions in the form of feedback relating to the information shared it proves fruitful for further learning and growth.

Qualitative approach discussion

Perception relating to the pedagogical aspects

Communication: As most of the students' already had an account on FB, so they felt convenient to use it. Students perceive that the creation of a group on FB facilitates general communication by allowing them to interact with all of their batch mates. Moreover, it also helps to convey a single message quickly to everyone in the group. The extracts from the semi-structured interviews are presented to explain the perception the students hold. Some are given below:

'Most of our friends use FB so in this regard it is the easiest way to communicate and interact with others' (P7)

Moreover, the students' perception indicates that SNS-FB not only facilitates general communication but additionally it also facilitates resource sharing. Through a formal learning FB group, they were able to get required data or information relating to the daily academic class discussions.

'If someone has any information, then you can ask them, and they can easily upload such material in this group' (P17)

Moreover, the qualitative results also reveal an increase in the communication among the students due to the formal FB group because they could interact more with all of their batch mates as compared to the conventional system. Therefore, in light of the above discussion, we can infer that through the use of FB group for formal learning the students can communicate in two ways. Firstly, as a general communication with their peers and secondly a communication through which they can share their ideas and academic resources related to a particular topic.

Collaboration: The qualitative analysis further revealed that the students perceive collaboration in two ways, i.e., content-based and interest-based. Interest-based collaboration help students to create communities with like-minded people and share their views, concepts, and materials.

‘Students may not sit (as in a classroom) and collaborate with each other, but after introducing this activity discussions increased, and students started asking more questions from each other’ (P13)

Moreover, the students perceive that the content-based collaboration enhances their engagement as it permits two-way communication. Through interactive platforms, students get a chance to understand the perception of other students and feel quite comfortable to ask questions from others relating to the issues they may face during their lectures or assignments.

‘Maybe someone (student) will not be able to understand single headedly so others might be guiding him/her collectively’ (P14).

Resource Material Sharing: Students advocate the usage of FB in an academic environment as they perceive that they can acquire information relating to their assignment from the information shared by their peers and the instructor that adds more opportunity to understand and learn. Therefore, material sharing in such type of platforms create a habit of reading among the students alongside with the routine lectures.

‘Through this, we came to know about many things otherwise just traditional reading at times does not help in learning’ (P14)

Content learning: The purpose to introduce any new technique in the educational system is to develop skill among the students (Arquero & Romero-Frías, 2011). So this study aimed to enable the students’ to know the procedure how to select a topic and develop a research proposal. According to the students, the first and foremost benefit they gained through this activity was that they learned the procedure to develop a research proposal.

‘Learned a complete procedure of research and research proposal’ (P1)

Critical thinking: Another element of pedagogical factors is critical thinking that develops a skill among the students to establish a concept for critically evaluating the views and opinions of people. This activity, helped in enhancing the critical thinking among the students, as they were interested in the varying viewpoints more on their posts instead of positive views.

‘One thing we may understand from one perspective, but through this (activity), we came to know that what others think about it in a different way’ (P8)

‘We were able to understand others’ point of view’ (P16)

Students’ active role: The qualitative analysis revealed two sub-themes/dimensions of students’ active role. These sub-themes of active role pertains to the student to student and student to instructor. The students perceive that the usage of FB in the academic environment facilitates their interaction with the peers as well as their instructor. Therefore, it helps them to actively, participate in the learning process.

“Students were engaged in the development of research proposal. When I posted my topic, then I also tagged those students to whom I knew that they belong to the marketing class. So those students personally discussed with me and gave me advice relating to my proposal topic” (P18)

From the student-instructor perspective, students feel comfortable to interact with the instructor. This finding is aligned with the finding of Akbari et al. (2010) and suggest that it is usually difficult for the instructors to focus on each student during their busy schedule. Therefore, such mediums prove to be helpful for increasing engagement among the instructor and students.

‘The best thing I found was the teacher-student interaction. The teacher interacts with the students on their level’ (P14)

Miscellaneous: Apart from the pedagogical factors, some other themes emerged through the semi-structured interviews. Some are as follows:

Comparison of the traditional assignment with this activity: The students perceive the regular assignments as a formality that needs to be submitted just for the sake to secure assessment scores. However, the usage of SNS-FB for formal learning helped in transforming the students’ perception of the assignment. The students perceive that such activities help them not only to complete their class assignment, butit also enhances their learning, improves interaction with the instructor, helps to engage more with peers and most importantly promotes critical thinking.

Activity replication: *The students* strongly recommend to replicate this activity in other courses too because they perceive such an activity could make studies more exciting

Future directions for the academicians

This study proves to be helpful for the academicians because it provides a new technique to interact with students and they can better learn through this activity. This study examined the pedagogical factors of the higher education students of business studies, but in the future, academicians should replicate this system in the undergraduate system too. Academicians should replicate this study in other fields also like Medical and Natural Sciences, Engineering and Arts, etc.

Limitations

The current study, confirms the six pedagogical factors perspectives. However, there may be other factors that can be identified through future studies. So this study provides a basis for the future researchers to not only confirm this model with larger sample size but also identify the other factors that may fall within the pedagogical factors.

Moreover, this study examined the pedagogical factors using FB only, so future researchers should confirm that whether these factors are equally helpful for other SNSs or not? Future researchers can also identify the factors that distract the students from such pedagogical factors This means that the students may indulge in cyberloafing activities. Furthermore, future researchers should also focus on the sub-dimensions of the pedagogical factors that emerged from qualitative analysis relating to communication, collaboration, and student-active role. The future researchers should consider the randomized control trials for a better understanding.

Additionally, the study sample included the students belonged to a Public Sector University, so other institutions governed by the private sector were not included. So such studies can be conducted in different educational settings for further understanding.

Conclusion

The present study was a success as it was able to testify the theory both quantitatively and qualitatively. Moreover, the study was able to identify and testify the effects of the use of social networking sites such as Facebook for formal learning purposes. Additionally, the study was able to identify the sub-dimensions of the pedagogical factors through semi-structured interviews.

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