

An Innovative Research on the usage of Facebook in the Higher Education context of Hong Kong

Louis Lam

The School of Continuing and Professional Studies, The Chinese University of Hong Kong, Shatin, Hong Kong

louis.lam@cuhk.edu.hk

Abstract: Teaching and learning is undergoing a dramatic change due to the advancement in telecommunication and IT. Increasingly, online learning platform is playing an important role higher education. The maturity of Internet and emergence of various cloud services catalyse the development of these platforms and student learning behaviour. An example is Facebook, online social network sites, which changes the interaction, communication and interrelation of students and their daily life. There is a growing trend that people participate in Facebook. Given there is discussion forum provided by online learning platforms, students get used to communicate on Facebook. The phenomenon enables teachers to think whether Facebook can be incorporated in teaching so as to facilitate student learning. Past research on online social network sites evidence that there are a number of benefits including the improved student participation, social relationship, interaction, communication and facilitation. However, seldom studies try to consolidate these benefits and examine simultaneously against the overall learning motivation. This study attempts to develop a model of student motivation in learning with four Facebook benefits: (1) Interaction, (2) Communication, (3) Social relationship, (4) Participation. The students of the School of Continuing and Professional Studies (SCS), The Chinese University of Hong Kong (CUHK), studying Hi-Diploma Programme, are invited to participate in this study. A survey was conducted to examine how these Facebook benefits relate to student motivation in learning. The results revealed that Interrelationship, Communication, Social relationship, and Participation influence significantly on student learning motivation. The results show teachers how Facebook benefits improve student learning motivation. The study also tries to explore some demographic trend in related to student Facebook usage.

Keywords: student motivation, online social network site, Facebook, online learning platform

1. Introduction

There is an increasing trend that online learning platforms are becoming important in teaching and learning (Volery & Lord, 2000). And these online learning platforms provide comprehensive to functions in teaching and learning. However, the maturity of Internet facilitates the development of different social or community services which are widely accepted by students. This results in students willing to spend hours on these services rather than the online learning platforms. An obvious example is Facebook, a social networking service and website launched in February 2004 (Eldon, 2008). The emerge of social networking service creates a new paradigm of Internet usage. Facebook is widely adopted by people all round the world and the number of user increases over time (Nathan & Jessica, 2011). According to the 'Facebook Statistics, Stats and Facts for 2011', over 700 billion minutes a month are spent on Facebook, 20 million applications are installed per day and over 250 million people interact with Facebook from outside the official website on a monthly basis, across 2 million websites. The core 18-24 year old segment is now growing the fastest at 74% year on year. Almost 72% of all US internet users are on now Facebook, while 70% of the entire user base is located outside of the US (<http://www.digitalbuzzblog.com/facebook-statistics-stats-facts-2011/>).

People are increasingly using Facebook for communication, social network and interaction. Using Facebook becomes part of a routine. Students use Facebook frequently to communicate and interact with friends and classmates (Adam, 2008) where as they may spend hours in there (Zhao, Sherri & Jason, 2008). Even though online learning platforms provide the discussion forum and messaging features, students prefer discussing and communicating on Facebook. In order to motivate student learning, some teachers are trying to make use of Facebook in teaching and learning (Mazer, Murphy & Simonds, 2007). Past studies investigate various benefits of Facebook including the social benefits (Ellison, Steinfield & Lampe, 2007; Zhao, Sherri & Jason, 2008; Adam, 2008; Morris & Millen, 2007), student perception on various social aspects (Special & Li-Barber, 2012; DeSchryver, Mishra, Koehleer, & Francis, 2009; Hewitt & Forte, 2007), student learning attitude, social relationship and learning environments (Mazer, Murphy & Simonds, 2007). However, seldom studies try to consolidate these benefits and how these benefits influence student motivation in learning through incorporating Facebook in teaching.

2. Prior studies and hypotheses development

2.1 Student motivation in learning

Student motivation naturally has to do with students' desire to participate in the learning process (Brophy, 1987). There are two different types of student motivation, namely the intrinsic and extrinsic student motivation. Intrinsic motivated student participates in an activity 'for its own sake, for the enjoyment it provides, the learning it permits, or the feelings of accomplishment it evokes' (Lepper, 1988) whereas extrinsic motivated student performs "in order to obtain some reward or avoid some punishment external to the activity itself," such as grades, stickers, or teacher approval (Lepper, 1988). Thus, even though they are equally motivated to participate in an activity, the origin or focus of their motivation are different. However, Marshall (1987) pointed out that there were slight difference between 'student motivation' and 'motivation to learn' which meant the meaningfulness, value, and benefits of academic tasks to the learner--regardless of whether or not they are intrinsically interesting. Besides, Ames (1990) further explained 'motivation to learn' was featured by long-term, quality involvement in learning and commitment to the process of learning.

Student motivation in learning is important to student learning success (McCombs & Whisler, 1997). There is a positive correlation between student motivation and academic achievement (Ames & Archer, 1988; McCombs & Whisler, 1997) There are a number of activities that can improve student motivation. . This includes the environments for close interactions between teacher and student; close on-campus friendships and motivation in school-sponsored activities; class discussion and involvement with teacher in academic community; extracurricular involvement; academic work & experience; and interaction with peers (Pascarella & Terenzini, 2005). Gray & Daymond (2010) argued that in the course of academic achievement, student motivation is needed in order to reach academic achievement. Though, student motivation is found critical to student success, the majority of studies are taken place in blended classroom or online environment (Doolan, Hilliard & Thornton, 2006; Doolan, 2006) rather than social networking platform like Facebook.

2.2 The benefits of using Facebook

Many researchers have identified important variables dealing with Facebook. We examine four benefits: (1) interaction, (2)Communication , (3) Social relationship, (4) Participation.

Unlike tradition classroom interaction, online social networking site , such as Facebook, are not bounded by time and space constraints but these platforms do no provide traditional face-to-face communication. Thus, teachers become the facilitators and intermediaries between students and resources (Bower, 2001). The teacher is like a learning catalyst and knowledge navigator for students (Lammintakanen & Rissanen, 2005). Teachers should be active and interactive sufficiently to show their participation and involvement online (DeSchryver, Mishra, Koehler & Francis, 2009). Teachers roles changes when participating in online learning environments such as Facebook and communicating with students in order to establish the relationship and motivate students in learning (Mazer, Murphy & Simonds, 2007; Doolan, 2011). Thus, both teachers and students can benefit from the interaction facilitated by Facebook. This can be achieved through monitoring student progress; identifying student learning difficulties; motivating student to learn; giving advice to students in learning (Mazza & Dimitrova, 2004) as well as timely responses (P.-C. Sun et al., 2008).

A reliable online platform can facilitate the communication and interaction between teacher and student and also allow student to download learning materials and submit assignments. Thus, It is also crucial to learning success because an ease-of-use system improves student usability in terms of effectiveness, efficiency and satisfaction (Roblyer & Ekhaml, 2000), system representation (Romero, Du Boulay, Cox, Lutz & Bryant, 2007), easy-to-use interface design (Sun et al., 2008), user-friendliness (Holsapple & Lee-Post, 2006) and allow personalization (Picolli et al., 2001).

When students are given a course-related online platform to access, students should be confident and able to use online technologies (Webster & Hackley, 1997). Students should also make up their mind to use new technology (Levy 2003; Lammintakanen & Rissanen, 2005), be motivated to learning (Palloff & Pratt, 1999) and have a positive attitude toward computer and Internet (P.-C. Sun et al., 2008).

Hypothesis 1: The interaction benefit in Facebook should positively influence student motivation in learning

Hypothesis 2: The communication benefit in Facebook should positively influence student motivation in learning

Hypothesis 3: The social relationship benefit in Facebook should positively influence student motivation in learning

Hypothesis 4: The participation benefit in Facebook should positively influence student motivation in learning

The proposed model of student motivation in learning and Facebook benefits is shown in Figure 1.

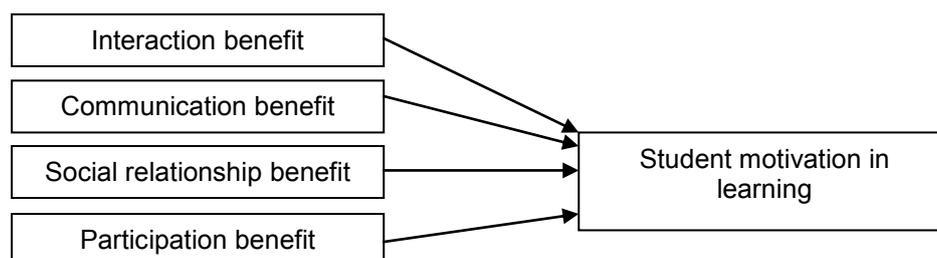


Figure 1: Facebook benefits influencing student motivation in learning

3. The purpose of the study and research questions

Authors argue the social benefits of Facebook (Ellison, Steinfield & Lampe, 2007; Zhao, Sherri & Jason, 2008; Adam, 2008; Morris & Millen, 2007), student perception on various social aspects (Special & Li-Barber, 2012; DeSchryver, Mishra, Koehleer, & Francis, 2009; Hewitt & Forte, 2007) and student learning attitude, social relationship and learning environments (Mazer, Murphy & Simonds, 2007). Though there is past study about Facebook benefits and student motivation, its focus is about the frequency of Facebook activities and student motivation. Besides, regarding the past literature on the area of student motivation, extensive research are studied in classroom environment or about face-to-face activities (Pascarella & Terenzini, 2005; Kuh, 2009; Azevedo, F. S., et al., 2012). Seldom studies focuses on relating student motivation to social networking service. . This study attempts to fill this research gap and propose a conceptual model. Thus, this comes to the research question:

What do the benefits of Facebook influence student motivation in learning?

4. Research methodology

4.1 Measurement development and pilot test

We conducted a number of in-depth interviews with various students of the School of Continuing and Professional Studies (SCS), The Chinese University of Hong Kong (CUHK) to examine the validity and reliability of our research model. Then, we developed the student questionnaire based on the survey instruments from the literatures and feedback from interviewees. The questionnaire was revised by teachers with significant experiences in implementing both online learning platform and Facebook in teaching. The questionnaire contained 7-point Likert scale questions from [1] strongly disagree to [7] strongly agree. A pilot test of the instruments was conducted with 43 students of Hi-Diploma programme, including coporate management and business information system; and mobile and network computing, where they were given both online learning platform and Facebook to use throughout the 15 week semester.

4.2 The course arrangement

Six classes of CUHK-SCS Hi-Diploma students (Total: 312) were arranged to access the MOODLE, online learning platform, and Facebook, social networking service for the 15 week semester. Students were required to download the course materials, submit assignments, and do the quizzes via MOODLE. Additionally, students were required to join a private study group on Facebook created by teachers in the beginning of the semester. Students were also required to participate in Facebook by

submitting individual & group case study on the Wall of the private group; answer quick quizzes; and prepare group presentation video clip and upload to the group for peer feedback. On the other hand, teachers were required to answer student questions posted on Facebook promptly, update students any news or supplementary resources using Facebook frequently.

4.3 Data collection

The data were collected from the CUHK SCS Hi-Diploma student's in-class. A total of 312 surveys were distributed at the end of the semester. The sampling method was convenient sampling where students were invited to participate in the survey where they were required to read and sign the survey consent form about the purpose of survey, the benefits and risks of participating in the survey. A total of 284 students returned the questionnaires. This resulted in a response rate of 91.0% . Table 1 shows the demographic profile and descriptive statistics of the respondents.

Among the 284 respondents, 201 (70.8%) of them were male whereas 83 (29.2%) were female. There were 219 (77.1%) students with age ranged from 18 - 21 whereas the rest of 65 (22.9%) students were mature students. In terms of Facebook usage, There were 14.8%, 17.6%, 13.7%, 16.2% of students spending less than 1hr, 1-2 hrs, 2-3 hrs and 3-4 hrs respectively. There were only 9.9%, 9.5% of students spending 4-5 hrs and 5-6 hrs respectively. However, there was 18.3% of students spending more than 6 hrs on Facebook.

In this research, the Statistical Package for the Social Sciences version 12 (SPSS v.12.0) was used for statistical analysis. The collected data was analyzed using multiple regression analysis. There were 4 variables, namely, (1) Interaction [B1], (2) Communication [B2], (3) Social relationship [B3], (4) Participation [B4] are used as the regressors and the students motivation in learning as regress.

Table 1: The demographic profile and descriptive statistics of the respondents (n=284)

Measure and items	Frequency	Percentage (%)
Gender		
Male	201	70.8
Female	83	29.2
Age		
18 - 21	219	77.1
22 - 25	51	18.0
26 - 29	10	3.5
30 - 33	4	1.0
Facebook usage		
Less than 1 hr	42	14.8
1 - 2 hrs	50	17.6
2 - 3 hrs	39	13.7
3 - 4 hrs	46	16.2
4 - 5 hrs	28	9.9
5 - 6 hrs	27	9.5
More than 6 hrs	52	18.3

5. Data analysis

5.1 Collinearity

Multiple regression analysis is used to test the significance of variables. Besides, in order to avoid any violation with the basic assumptions underlying the least squares method used by the linear regression model, P-P plot was conducted to assess the assumption of normality. The plot showed that the quantile pairs fell nearly on a straight line. Thus, it is reasonable concluding that the data used in this research are approximately normal. Then, this research used the VIF to assess the multicollinearity among independent variables in the model. As shown from the table 1, the tolerance and VIF values of all independent variables (1) to (4) were within the range (Tolerance > .2 and VIF <

4) that has no severe multicollinearity problem among the regressors. At last, we used the Durbin-Watson d statistic to detect serial correlation. The value of 1.972 (less than 2) indicated that autocorrelation problem does not exist (Gujarati, 2003). Table 2 shows the Collinearity Statistics

Table 2: Collinearity statistics

Independent variable ^a	Tolerance	VIF
Interaction [B1]	.314	2.541
Communication [B2]	.418	2.139
Social relationship [B3]	.276	3.246
Participation [B4]	.337	2.522
Durbin-Watson		1.972

^a Dependent variable: Student motivation in learning

5.2 Reliability and validity analysis

The questionnaires were presented to several experts to improve face and content validity. Reliability was examined using Cronbach's α values for each variable. As shown in Table 3, the values of four variables were above .72, which is a commonly acceptable level. The reliability of B1=.86; B2=.88; B3=.85; B4=.89; and SML=.80.

Table 3: Descriptive statistics, correlation, reliabilities among study variables (n=131)

Variables	Means	SD	(1)	(2)	(3)	(4)	(5)
Interaction [B1]	5.01	1.10	(.88)				
Communication [B2]	5.10	1.21	.72	(.92)			
Social relationship [B3]	4.78	1.25	.73	.60	(.89)		
Participation [B4]	4.68	1.40	.69	.57	.78	(.93)	
Student Motivation in Learning [SML] ^b	4.79	1.26	.70	.71	.82	.85	(.85)

^a Reliabilities (Cronbach's α) are in parentheses.

^b Dependent variable: SML

5.3 Pearson correlation analysis

In terms of the correlations between variables, B4 ($r=.93, p<.001$) has the highest correlation to the dependent variable. The B2 ($r=.92, p<.001$) has the 2nd highest correlation to the dependent variable. Then it is followed by the B3 ($r=.89, p<.001$) and B1 ($r=.88, p<.001$). All four variables exhibited significant relationships with student motivation in learning.

5.4 Hypotheses testing

This study conducted multiple regression analysis to test the hypotheses using SPSS. The four influential variables derived from previous research, i.e. B1, B2, B3, B4 were applied as independent variables, while SML was used as a dependent variable. Table 4 shows the results of the regression analysis. All four independent variables are considered to have significant relationships with student motivation in learning with p-values $<.05$. They are B1, B2, B3, and B4.

Hypothesis 1 examined the influence of the interaction benefit on student motivation in learning. It is supported, with p-values less than .0 and is significant. Hypothesis 2 examined the relationship between the communication benefit and student motivation in learning. It is supported where communication benefit has significant positive influence on student motivation in learning ($\beta=1.71, p<.01$). Social relationship has positively significant effect on student motivation in learning ($\beta=.185, p<.05$). Therefore, Hypothesis 3 is supported. Hypothesis 4, participation benefit has a strong, significant and positive influence on student motivation in learning ($\beta=0.465, p<.001$). Thus, Hypothesis 4 is supported.

Table 4: The results of the regression analysis^a

Independent variable	B	Beta (β)	t-value
(constant)	.156		.525
B1	.182	.161	2.164*
B2	.121	.171	3.174**
B3	.173	.196	3.206*
B4	.364	.359	4.471*
R	.806 ^a		
R Square	.650		
Adjusted R Square	.647		

	Sum of Squares	df	Mean Square	F
Regression	156.701	5	39.875	144.759***
Residual	28.474	117	.237	
Total	185.175	128		

^a Predictors: (Constant), B1, B2, B3, B4

^b Dependent Variable: (6) Student motivation in learning

Note: *. p<.05, **. p<.01, ***. p<.001

6. Discussion

6.1 An integrated model for student motivation of learning

As indicated from the results of multiple regression analysis, three of the four variables show significant and positive influences on student motivation in learning, i.e. B1, B2, B3, B4. . The adjusted R square suggested that 65.0% of the student motivation in learning's variance can be explained by these three variables ($F = 144.759$, $p < .001$). The model generated from the multiple regression analysis has a reasonable level of representativeness in the selected predictor variables. The model can be presented in form of prediction formula as follows:

$$SML = B1 \times w1 + B2 \times w2 + B3 \times w3 + B4 \times w4 + C$$

where C is constant; and $w1$, $w2$, $w3$, $w4$ are empirically determined weights.

6.2 Interaction benefit [B1]

Our findings corroborate those of Bower (2001); Lammintakanen & Rissanen (2005); DeSchryver, Mishra, Koehler & Francis (2009). The role of teachers become the facilitators and intermediaries between students and resources on the online platform. Through interaction, the teachers help catalysing student learning and behave as knowledge navigator for students. In order to have the interaction benefit from Facebook, teachers should be active and interactive sufficiently to show their participation and involvement online. Therefore, student can be motivated to learn throughout the benefit from improved interaction.

6.3 Communication benefit [B2]

Our findings corroborate those of Mazer, Murphy & Simonds, (2007); Doolan, (2011). The role of teachers changes when participating in Facebook. They are required to actively participate Facebook social environment, which, in turn, encourages the communication among teachers and students. Hence the relationship improved and also the students motivation in learning (.Roblyer & Ekhaml (2000); Romero, Du Boulay, Cox, Lutz & Bryant (2007). The convenience of technology has significant positive influences on student motivation of learning. Since the majority of students age ranges from 18 – 21 (see Table 1), they belong to Generation Y (Eisner, 2005). From the marketing perspective, they will have large disposable income; they are comfortable with technology; they tend to be impatient and “Now-Oriented” (Armstrong & Kotler, 2006). Thus, they are willing to accept new technology as long as it is easy-to-use and convenient (Sun et al., 2008). In order to improve student learning motivation and facilitate student learning, the benefit from communication is very important.

6.4 Social relationship benefit [B3]

Our findings corroborate those of Mazza & Dimitrova (2004); Mazer, Murphy & Simonds (2007), Social relationship benefit has significant positive influences on student motivation in learning. With Facebook, students are able to have better bonding and social capital (Ellison, Steinfield & Lampe, 2007). Besides, the friendliness and openness can be significantly improved throughout this platform (Zsolnai, 2010). Therefore, the role of teachers and students is very important in building better social relationships and also the student motivation in learning (Wentzel, 1998).

6.5 Participation benefit [B4]

Our findings corroborate those of Webster & Hackley (1997); Palloff & Pratt (1999); Levy (2003); Lammintakanen & Rissanen, (2005); and P.-C. Sun et al., (2008). The benefit of participation has the strongest influence on student motivation in learning. Facebook, which are not bounded by space, location and time, allows students to access more flexibly. Therefore, students should be autonomous and self-directed (Ostlund, 2008) by improving the participation aspect. Among the four independent variables, student participation in Facebook has the strongest association with student learning motivation. From an operational point of view, it is necessary to clarify with students their role in learning, especially the importance of participation when using Facebook in teaching and learning.

6.6 Concern about using Facebook in teaching and learning

There are teachers reluctant to use Facebook in teaching and learning. Their concerns are multiple identities (Morris & Millen, 2007); privacy and security issue (Govani & Pashley, 2005); and the original purpose of Facebook as a social networking platform rather than an online learning platform. Facebook is similar to the discussion forum in online learning platform which violates the system integration and data integrity. However, these are challenges that teachers should overcome. It is because the student behaviour changes over time and the age difference (generation gap) between teacher and student increases over time (Johnson & Kardos, 2005). Teachers have their responsibilities to tackle these challenges facing them and think of innovative teaching strategies or enhanced blended approach to facilitate student achievement in learning (Lau, Lam & Zhou, 2010; Lam, 2011).

Another concern are the variation in the acceptance of Facebook (Cheung, Chiu & Lee, 2011), there are cultural difference between students in Europe and Asia. Most students in Asia are willing to accept new technology quickly than those in Europe. In other words, students in Europe are skeptical in adopting new technology. Therefore, this raise a problem of imposing the use of Facebook in teaching and learning (Prahald & Ramaswamy, 2000).

7. Research limitation

One of the major limitations of this study is that the sample size is only 284 students and is not big enough for comprehensive regression analysis. This results in evaluating four critical benefits in related to Facebook. The students participating in this research are studying CUHK-SCS Hi-Diploma programme which can only reflect the characteristics in Chinese context. Therefore, the research findings are not completely representative and cannot be generalized. However, this study provide insights into student learning motivation and the benefits of social networking service if used in teaching and learning.

However, these limitations can be improved by increasing the sample size by inviting more teachers and students of different programmes participating in this study; inviting other institutions of different countries; and increasing the scope and depth of the research area and incorporating more social network service benefits so that more variables can be identified. Hence, an comprehensive model can be established

8. Conclusion

Student motivation is one of the important factors for student learning success. This research focuses on examining how the social network service benefits influencing student motivation in learning if this service is used in teaching and learning. It is believed that Facebook is not only the social network service, its benefits can help motivate student to learn if properly incorporated in teaching and learning.

The use of Facebook as part teaching and learning is rather new. Should it be used in teaching? Some would say not especially students, it is their informal space. After all, students keep changing their behaviour with new technologies. The generation gap between teacher and student is increasing over time. The main issue is how to tackle and overcome the gap; and facilitate student learning. This research attempts to identify factors influencing student motivation in learning. An integrated model developed from previous studies consisting of four benefits is presented to guide research and overcome the gap.

Three of the factors, Teacher-student interaction, Convenience of technology and Student attitude toward Facebook, had significant positive influences on Student motivation in Learning. From the statistical result, 83.4% of the student motivation in learning's variance can be explained by these three variables ($F = 158.68$, $p < .001$). The model generated from the multiple regression analysis has a reasonable level of representativeness in the selected predictor variables. Among the three significant independent variables, student attitude toward Facebook has the strongest influences on student motivation in learning. This implies this factor is the most important one in engagement.

Though there are only three factors identified in this study, this study provides insights for teachers who are planning to use Facebook as part their teaching; and academics who are interested in these research areas. This study is designed and planned carefully and yet there are certain limitations. It is suggested to continue this study in order to tackle those limitations, making the future results and integrated model more representative and generalisable. Further research might incorporate more variables and investigate variance between degree or sub-degree courses students; and between different programme of students within CUHK or across institutions. However, what this research does offer is to provide insights about how student motivation in learning can be influenced using Facebook as part of online learning platform; and researchers who are interested in research areas of student engagement, online social network site, Facebook and online learning platform.

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