

## **Effectiveness and obstacle of using Facebook as a tool to facilitate student-centred learning in higher education**

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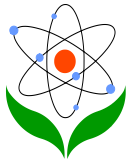
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### **Contents**

- [Abstract](#)
- [Introduction](#)



- [Methodology: Research Design](#)
  - [Findings](#)
  - [Discussion](#)
    - [Educational values of Facebook as a social network site](#)
    - [Privacy issue of Facebook in teaching and learning](#)
    - [Intended learning outcomes](#)
  - [Concluding remarks](#)
  - [References](#)
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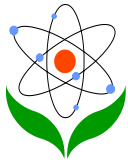
## Abstract

Blended learning which combines face-to-face and online experiences of students by integrating technology into the curriculum is increasingly prevalent in university education. In a context of long time arguments on the educational value of using social networking websites on teaching and learning, this study was conducted in two higher education institutes in Hong Kong, seeking to examine the advantages and challenges of using Facebook for sharing students' assignments, and the achievement of the course objectives in two courses. Results revealed that course assessment in Facebook could facilitate student interaction and their knowledge construction. Privacy, however, is found to be an issue that needs to be looked into specifically in order to facilitate a safe and comfortable educational learning experience of students.

**Keywords:** assessment; blended learning; Facebook; higher education; knowledge construction; social networking site; privacy

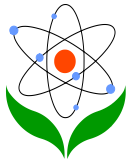
## Introduction

Aiming to offer an environment that helps engage students and enrich their quality of experience through interactive learning activities, blended learning which combines face-to-face and online experiences of students by integrating technology into the curriculum is increasingly prevalent in university education (Irwin, Ball, Desbrow, & Leveritt, 2012). Blended learning is seen as a way for institutes to prepare themselves for the next era in education (Echo360, 2012). Facebook, a popular online Social Network Site (SNS) used among university students (Roblyer,



McDaniel, Webb, Herman, & Witty, 2010; Wise, Skues, & Williams, 2011), has been examined in many different countries and disciplines for its educational value in the higher education (e.g. Baran, 2010; Erdem & Kibar, 2014; Lam, 2012; Madge, Meek, Wellens, & Hooley, 2009; McCarthy, 2012; Ophus & Abbitt, 2009; Selwyn, 2009; Shih, 2011; Wang, Scown, Urquhart, & Hardman, 2014; Wise et al., 2011). Diverse research results were found. Some supported the online environment be a valuable resource to promote academic critiques, discussion and networking to enhance learning experience (Erdem & Kibar, 2014; McCarthy, 2012), whereas others argued that the social networking website appeared more like a distraction rather than a support in student academic engagement (Baran, 2010; Wise et al., 2011).

Not only is Facebook used as a tool in this contemporary era of education, it is also predominantly used as an important technological tool for various forms of science education (Whittaker, Howarth, & Lymn, 2014; Huang, Wu, She & Lin, 2014; Waghid, 2015). The speeding up of responses and feedback using Facebook and the subsequent synchronous online discussion facilitate the development of content knowledge, which fosters understanding of content related nature of science (NOS) (Huang, Wu, She & Lin, 2014). Gilakjani, Leong, and Ismail (2013) contended that technology as part of a learning theory is more than a tool. By using technology in a constructivist approach, they believed that teachers can involve students in the learning activities, structure the instruction to meet different learning levels and styles, and broaden the range of resources that are available to the learners. Manca and Ranierit (2007) summarized in their empirical review of using Facebook as a technology-enhanced learning environment that Facebook was adopted mainly for the following five educational uses: 1) supporting discussion and allowing students to learn from each other through mutual understanding and critical thinking exercises; 2) developing pieces of multimedia content; 3) sharing resources; 4) delivering content to expand the curriculum and expose students to external resources; and 5) using it to support self-managed learning. This usage, according to Marsh (2005), sought to enhance the components of student-centred learning, given the facilitation of constructivism which emphasizes the active role of learners in building understanding and making sense of information, and collaborative learning among learners and teachers which is beneficial for science learning. To enhance the benefits of Facebook use for learning, Kitchakarn (2016) proposed that the teacher needed to make clear the learning objective of each Facebook activity and pointed out to their students the efficiency of Facebook was not only for social connection



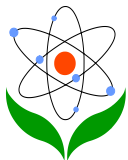
but as a learning tool for knowledge construction. The learning outcome being made clear to students at the beginning of the course would help them achieve it.

Regarding the use of Facebook for learning, Kitchakarn referred to Vigotsky's view about learning in that apart from serving as a means for communication, the use of online technology can also help learners create their own knowledge (p.53). Facebook users can share their learning resources such as lecture notes and assignments, give feedback and comments, and actively engage themselves in learning activities (Alm, 2006; Wang, Lin, Yu, & Wu, 2012).

Davis (1989), in his study of the adoption of new technologies in various situations and in different contexts, proposed a three-factor Technology Acceptance Model (TAM). The three factors used were Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and Attitude toward Usage (ATU). Kirchakarn who adopted the TAM in his study on student English learning identified that students were positive toward learning through Facebook which is user friendly. Student perceived usefulness of Facebook also correlated with their attitude toward doing activities in Facebook (2016, p.59).

Using SNS such as Facebook has its limitations and constraints. In examining if the Facebook page was successful as a learning management system (LMS), Wang, Woo, Quek, Yang and Liu (2012) used the pedagogical, social and technological affordances concept in a study of two elective courses at a teaching education institute in Singapore. They found that social affordances (in providing a safe and friendly environment in which students could conveniently communicate and interact with one another) were negatively correlated with student perception on using Facebook for academic study. Students were worried that their academic postings in course Facebook could be viewed by their Facebook friends (other than their peers in the course) through automatic notification (p. 433), and some did not really want to share private lives with their peers.

In order to catch up with the pace of technological advancement and in response to the global trend of moving toward learner-centred approach in higher education (Hallinger & Fu, 2012), the University of Hong Kong and the Hong Kong Institute of Education (retitled as the Education University of Hong Kong on 27 May 2016) adopted Facebook as a sharing platform for an assignment to facilitate and inform teaching and learning in two courses. It is anticipated that through the assignment, Facebook could be used in a constructive manner, as described by Jonassen, Peck,



and Wilson (1999), in that students could be mobilized to initiate self-directed learning, collect information, manipulate data, explore relationships, intentionally and actively process information, construct personal and socially shared meaning and reflect on the learning process. This process is to a great extent similar to the scientific research process, as it involves the collection, manipulation and analysis of data in exploring any useful relationships. The experiential learning cycle framework of Kolb (1984) could be applied like what Blumenfield (2014) did in her course in the Furman University to facilitate students' independent knowledge construction.

## Methodology

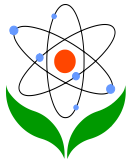
### Research Design

The study was administered for the students enrolled in two courses in the University of Hong Kong (HKU) and the Hong Kong Institute of Education (HKIED), respectively. Details of the courses and the number of participants are shown in Table 1.

**Table 1:** Courses that applied Facebook as a tool for assessment

	HKU (N=123)	HKIED (N=26)
<b>Course name</b>	Environmental Quality Management	Trends and Development in General Studies
<b>Course level</b>	Master of Science in Environmental Management Year 1	Postgraduate Diploma in Education Programme (Part-time) Year 2
<b>Data collection year</b>	2010-11 (n=41); 2012-13 (n=42); 2014-15 (n=40)	2012-13 (n=26)

For the HKU study, the lecturer asked the students to identify, by using two pictures (each with a caption of no more than 200 words), the pressing environmental issues in Hong Kong. Students had to send the pictures and their captions to the lecturer via email and then the lecturer would upload the pictures onto the Facebook page developed exclusively for the course. Students were then arranged to conduct oral presentations of the pictures (a maximum of five minutes) by using the Facebook platform. The context, content, quality and alacrity of pictures and captions, as well as the effectiveness of the oral communication were assessed. This kind of arrangement had been repeated in the course for three cohorts.



The design of the HKIED study resembled that of its HKU counterpart, with very minor differences in the administration procedures. Instead of having the lecturer to centralize the collection of the pictures and captions for mass uploading, the students in HKIED uploaded the pictures and captions on their own to the common Facebook account created by the lecturer. This kind of assessment was innovative in the courses of HKIED at that time.

After the oral presentation, all the students were asked to complete a questionnaire comprising thirteen items (using a 5-point scale that ranged from strongly disagree to strongly agree) with an objective to find out the responses of the students toward the incorporation of Facebook in their coursework and their perception about achievement of the intended learning outcomes. Descriptive figures of the results were reported in terms of percentage and the questions were further categorized into: a) Difficulty in completing the assignment (Q1); b) Enjoyment in the assignment (Q3, 4, 5); c) Use of Facebook for learning (Q6, 9); d) Privacy issues due to the use of Facebook (Q7, 8); e) Intended learning outcomes (Q2, 10, 11, 12); and f) Overall achievement of learning outcomes (Q13). The questionnaire was designed, basing on a thorough analysis of the literature reviewed in the study. The pedagogical, social and technological affordances of using Facebook group as a LMS (Wang, Woo, Quek, Yang and Liu, 2012) and the Technological Acceptance Model of Davis (1989) were referred to in the design of the themes a), b), c) and d). More specifically, as the study also aimed to find out if the learning objectives of the course (in enabling students to be more creative, and more aware and knowledgeable of the environmental problems) were attained, questions in themes e) and f) were developed (Kitchakarn, 2016).

The Statistical Package for Social Sciences (IBM SPSS Statistics Version 23.0) was used for the quantitative data analysis. The differences among groups were assessed by the analysis of variance (ANOVA). Multiple regression analysis was used for determining the association among different parameters. The significance level was set at  $p < 0.05$ .

## Findings

Given no significant difference in the HKU responses collected among different years ( $p > 0.05$ ; one-way ANOVA), the data from these years were combined as one group (i.e.,  $N = 123$ ) for analysis.

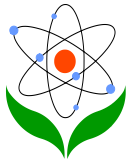
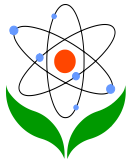


Table 2 presents the questionnaire results regarding student views on incorporating Facebook in their course assessment.

**Table 2:** Questionnaire results on the use of Facebook as a tool for assessment

	Items	HKU (%)(N=123)	HKIED (%)(N=26)
1.	I was able to cope with this assignment easily.	78.9	84.6
2.	This assignment encouraged me to be creative.	82.9	88.5
3.	This is an interesting assignment to arouse my awareness in contemporary environmental issues.	83.7	96.2
4.	I enjoyed taking the pictures and sharing my views on the two environmental issues.	84.6	88.5
5.	I enjoyed the learning process of viewing the pictures and listening to the presentations given by my classmates.	82.1	100.0
6.	I would like to further review the pictures and read the captions made by my classmates on Facebook and give feedback or comments on some of them using Facebook's Wall as a form of peer discussion..	65.0	79.6
7.	I would like to further share my pictures and captions with my friends via Facebook.	49.6	61.5
8.	I will add this assignment Facebook address to my own Facebook and further share it with my friends.	40.7	30.8
9.	It is a good way to promote environmental awareness by posting our pictures and captions on Facebook.	74.8	88.5
10.	The learning activities were well organized that provided me an overview of current environmental problems in Hong Kong.	82.1	65.4
11.	I learnt much from the interactive discussion among students and the lecturer during the presentation sessions.	75.4	80.8
12.	This assignment inspired me to pursue further learning in the field of environmental management/ education.	74.0	73.1
13.	I achieved the learning outcomes of this assignment.	82.9	80.8

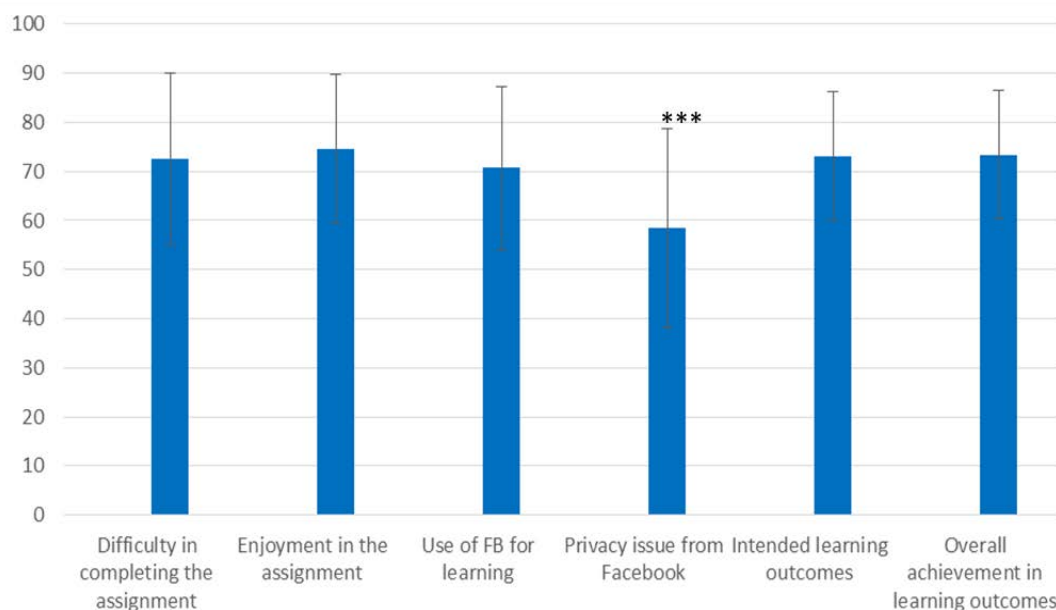
Results revealed that students in general were able to cope with the assignment (HKU: 78.9%; HKIED: 84.6%). About 80% of students in each of the courses perceived they have achieved the learning outcomes of the assignment (HKU: 82.9%; HKIED: 80.8%). Over 80% of them found applying Facebook in the assignment interesting (HKU: 83.7%; HKIED: 96.2%) and all students in HKIED enjoyed this kind of learning process (HKU: 82.1%; HKIED: 100%). Students also showed



positive comments on the constructivist use of Facebook in their learning as they found it helpful in peer discussion (HKU: 65.0%; HKIEd: 76.9%), interactive discussion in class (HKU: 75.4%; HKIEd: 80.8%) and further learning pursuit in the field (HKU: 74.0%; HKIEd: 73.1%).

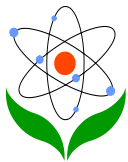
Students, in general, supported that the sharing function of Facebook was a good way to promote environmental awareness (HKU: 74.8%; HKIEd: 88.5%). Nevertheless, it was important to note that students were not inclined to share the assignments out to their personal accounts or share their assignments to their friends (HKU: 40.7%; HKIEd: 30.8%). Statistical analysis by one-way ANOVA indicated that students concerned on the privacy issues induced by the use of Facebook (Q.7, 8). The mean score of this category was the lowest (HKU:  $58.5 \pm 20.3$  SD; HKIEd:  $58.65 \pm 17.95$  SD) (one-way ANOVA,  $p < 0.0001$  for both Universities) when compared with other groups (Figures 1 and 2).

The segregation identified in the study suggested student resentment of their social networking space being invaded by their academic study. This result also echoed the findings revealed by Madge et al. (2009) that the majority of students opposed lecturers or university supporting staff to contact them via Facebook for teaching, marketing, pastoral or administrative purposes.

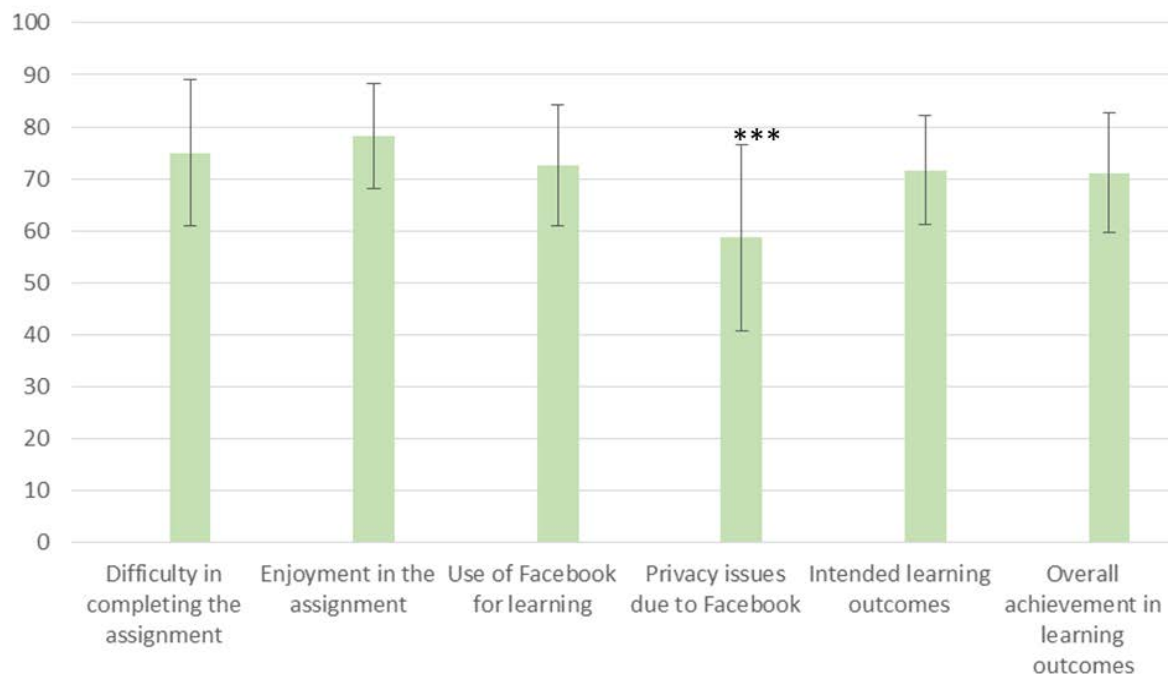


**Figure 1.** The mean scores of the six categories of HKU data. Error bars show  $\pm 1$ SD values.





Note: \*\*\* means  $p < 0.0001$  for the significance level of ANOVA.



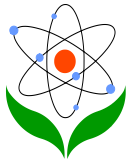
**Figure 2.** The mean scores of the six categories of HKIED data. Error bars show  $\pm 1SD$  values.

Note: \*\*\* means  $p < 0.0001$  for the significance level of ANOVA.

In order to determine the factor(s) affecting the overall achievement in learning outcomes (Q13), multiple regression analysis was conducted against various predictor variables that are described in the Research Design. The results from HKU data showed that “Intended learning outcomes” ( $p < 0.0001$ ) was the only variable significantly determining the overall achievement in learning outcomes. The resulted regression model ( $p < 0.0001$ ;  $R^2 = 0.347$ ) is as follows:

$$\text{Overall achievement in learning outcomes} = 30.367 + 0.588 (\text{Intended learning outcomes})$$

The results from HKIED study, on the other hand, indicated that “Privacy issue due to the use of Facebook” is the determining factor negatively affecting the overall achievement in learning outcomes ( $p < 0.016$ ;  $R^2 = 0.218$ ) and the regression model is:



*Overall achievement in learning outcomes = 53.470 – 0.301 (Privacy issues due to the use of Facebook)*

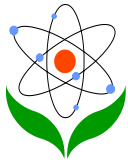
## **Discussion**

### **Educational values of Facebook as a social network site**

The study reported a significant association between student perceived intended learning outcomes and their overall achievement. The students supported that assignment conducted with Facebook could facilitate their interactive discussion with classmates and lecturers, and inspire their further learning. This attainment of intended learning outcomes via using Facebook not only echoed but further affirmed, based on the student expressed view, the educational values of a social network site such as Facebook in enhancing interaction among learners who were facing the common interests and difficulties during studies (Selwyn, 2009). The findings also revealed that Facebook platform could promote learner interactions that are related to formal educational objectives by establishing new networks of collaborative learning (Hrastinski & Aghaee, 2012; Selwyn, 2009). Students reflected that the assessment mode using Facebook provided them with the opportunity to develop an overview of the issue holistically. This view to a certain extent supported the adoption of Facebook from the social constructivist perspective in that knowledge is constructed when individuals engage socially in talk and activity about shared problems and tasks (Driver, Asoko, Leach, Mortimer, & Scott, 2008). Despite the common view that the integration of Facebook in the course delivery process, instead of in their course assignment only, for a holistic integration into the learning process may give rise to different results, student positive learning experiences gained from learning with the social network site displayed in the findings of this study did confirm the possible direction for using Facebook to facilitate effective teaching and learning through interactions. According to Hung and Yuen (2010), a structured mechanism for interaction and information-sharing, instead of just adding a social network into a course, could contribute to successful learning.

### **Privacy issue of Facebook in teaching and learning**

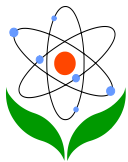
Students showed concern about the privacy issue of adopting Facebook, developed originally as a social networking platform, in teaching and learning. Significant correlation was found between privacy issue of using Facebook and student overall



achievement in learning outcomes in the HKIEd group. Given slight differences of assignment submission procedures between the two institutes, the administrative design of HKU centralizing the mass upload of assignments by the lecturer using one Facebook account exclusively for the course may account for the different findings obtained. The privacy issue of using Facebook was found to have a significant impact on the overall achievement of learning outcomes of HKIEd students (as similar with the findings in the study by Wang et al., 2012). The two items regarding the sharing of assignments with friends on Facebook, which probably resulted in a blurring of private and learning zones, were the least preferred by students in both institutes when compared with other items in the questionnaire. It is suggested that in designing the course content, and its assignments, student individual differences on the preferences and concerns of using Facebook have to be taken into account carefully in order to maximize the teaching and learning effectiveness of the social network site. A discussion with the students on the most acceptable way of using Facebook in course learning and assessment may help lessen the resentment of students on adopting Facebook in their study (Kitchaharn, 2016).

### **Intended learning outcomes**

The results showed that the theme “intended learning outcomes” is a key factor significantly impacting the overall achievement of learning outcomes of HKU students. This theme covers whether the assignment encouraged the students to be creative; whether the learning activities provided them an overview of current environmental problems in Hong Kong; whether they learnt much from the in-class discussion; and whether the assignment inspired them to pursue further learning in the subject. The significant positive correlation echoes student open-ended comments. Students mentioned that this assignment was interesting and could encourage them to think about Hong Kong’s environmental issues more and extend their views to global level. Learning from peers by reading the Facebook page was effective as they could (re-)visit the Facebook page whenever they wanted to read and it was eye-catching with nice pictures and limited words. However, students also revealed that more time should be given for preparing the assignment so as to increase its effectiveness. As some students may not be clear about the environmental issues in Hong Kong (some were non-local students), it is suggested that a brief overview of key environmental issues of Hong Kong could be provided to students beforehand.

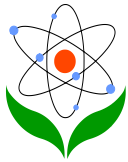


## Concluding remarks

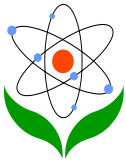
Facebook, supported by the results in the study, can be seen as a useful educational tool for teaching and learning in higher education institutions, especially in terms of providing a platform for interactions and hence facilitating knowledge construction. However, when using Facebook, caution must be taken to minimize the use of student personal account, henceforth avoiding the invasion of their private social networking space. It is believed that both the technical designs and student perceptions and preferences of using the technology need to be considered in course planning so as to provide students with a stimulating educational learning experience.

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