

Review Article

Integrating Facebook into Basic Sciences Education: A Comparison of a Faculty-Administered Facebook Page and Group

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Abstract

Facebook (FB) is the most popular social media site visited by university students on a daily basis. Consequently, FB is the logical place to start with for integrating social media into education. The purpose of this study is to explore the use of a faculty-administered FB Page versus a FB Group to supplement and enhance human basic sciences educational experiences. First and second year medical students at the University of Ottawa (UO) and the University of Sharjah (UoS) to whom the group and page were dedicated were invited to take a survey regarding the use of FB as an extracurricular way of enhancing their teaching experience. The majority of students had presence on social networking sites with predominance of FB. Both students using the Anatomy page in UoS and members of the histology Group in UO stated that FB was a time effective way of communication with easy access to the learning material; it was an inviting atmosphere to participate with self-assessment questions being the most popular posts category. Pages and groups are equally accepted by students. Innovative instructors are required to experiment with ways to bring this familiar environment to the classroom. This entails an understanding of the capabilities and limitations of the Page and Group which has been thoroughly discussed in this study. FB should not only be used because students are embracing this new technology trend but because of its inherent potentials in boosting e-learning."

Keywords: Basic sciences education; E-learning; Innovations in medical education; Social media; Facebook pages and groups

Introduction

With the rapid development in information and communication technologies (ICTs), various changes have been made in terms of the methods in the teaching and learning process [1]. Social networking sites have attracted a huge following amongst university students and became an integral part of their daily lives. Thus, it is not surprising to assume that they have a potential to improve learning [2,3]. Medical learning, in particular, has grown beyond the boundaries of the four walls of the classroom. Social media is seen as an informal way of learning and offers the opportunity for the students to be highly engaged with educational content outside the four walls of the classroom.

Creative applications of these technologies are tremendously growing at universities around the world, yet there are few examples of their implementation in education for medical students. Some examples of social networking sites are MySpace, Instagram, YouTube, Twitter and Facebook. Although Facebook started out in early 2004 as a Harvard-only social networking site, Facebook is currently the leading social networking site, with more than 1.3 billion active users as of January 2014. According to Facebook statistics, 48% log on in any given day and collectively spend 640 million minutes per month on Facebook [4]. The Facebook phenomenon is happening all over the world. In America, 42% of teens of ages 12-17 communicate via Facebook, replacing landline phones and email with the site.

Undeniably, the young generation now is spending more and more time online and on Facebook [5]. The question is, with the growing amount of time youth are spending on social networking sites like Facebook, how should educators consider these to be of value for educational purposes?

Facebook "Timeline" allows users to share information about themselves. Facebook "Pages" allow organizations, businesses, and celebrities to communicate broadly with people who "like" them. Once liked a page fan starts receiving updates which appear in the news feeds. However, Facebook pages are public, a feature that can be controlled in Facebook "Groups." Groups are more suited to small-group discussions on shared interests and have privacy settings that can be set as open, closed or secret [4].

The purpose of this study is to explore the use of a faculty-administered Facebook Page versus a Facebook Group to supplement and enhance human basic sciences educational experiences beyond those of the traditional classroom. The aim is to provide a model of Facebook use as an educational resource in basic sciences education and to compare the integration of a Facebook Page versus the integration of a Facebook Group into medical education.

Methods and Procedures

The use of Facebook as a faculty-administered closed Group was incorporated into histology teaching at the Faculty of Medicine,

University of Ottawa (UO) for two academic years, since 2012. Totals of 13 and 18 hours of lectures were devoted to first-year and second-year medical students, respectively. The students were divided into 2 Anglophone groups and 1 Francophone group to be taught by the same professor in their second year of studies and different professors in their first year of studies. The use of a Facebook Page was incorporated into anatomy education resources for second-year medical students at the University of Sharjah (UoS) for two academic years, since 2011. A total of 205 hours was devoted to anatomical sciences and distributed as gross anatomy, 78%; histology, 13%, and embryology, 9%.

The infrastructure of the Faculty of Medicine, UO and UoS is designed to allow free Wi-Fi internet access for all students anywhere on the campus. In UO and UoS, online support to the courses included teaching materials which were made available through one 45 (Source) and the Blackboard learning management system (Blackboard Inc., Washington, DC) respectively. Facebook participation was optional, and students were not graded for participation.

The purpose of the Human Anatomy Education (HAE) Page [<https://www.facebook.com/AnatomyEducation>] at UoS [6] as well as the Histology Group [<https://www.facebook.com/groups/509891252420943/>] was to support classroom-based teaching with comments, links, questions, pictures, videos, and interactions. Post categories included assessment, explanatory comments, revision files, videos and video links, book/article recommendations, anatomy- and histology-related humor, arts and history in relation to anatomy and contributions from the audience. Most of the HAE Page and the Histology Group posts were timed to be in synchrony with the objectives of the courses studied at both universities.

Students at the University of Ottawa and the University of Sharjah (total possible $n = 320$ and $n = 157$ respectively) to whom the Group and Page were dedicated were invited to take a survey regarding the use of Facebook as an extracurricular way of enhancing their learning experiences. Survey questions were designed based on the current literature [7-10] and optimized with input from faculty and medical student focus groups.

The Histology Group was assessed by an online survey questionnaire created on Google Drive Forms and Statistics were extracted from Google Drive analytics with the free Spanning Stats for Google drive. Although the Insights tool is not available for a Group, the engagement rate was manually calculated by summing up number of likes and comments for each post and dividing them by the number of members who saw the post. The HAE Page was assessed by two methods: first, by distributing paper-based surveys to in-class students, and second, by using the Insights tool of Facebook to provide metrics on the Page's performance. Significant Insights tool metrics are detailed in [6].

The surveys consisted of items including Likert-style questions, multiple choice questions, yes/no questions and short-answer questions. The data presented was anonymously collected. Participation of students was entirely voluntary and anonymous. No incentives were offered for the completion of the survey [Appendix-1].

The survey questions were divided into sections, each of which approached a concern about student's use of Facebook: (1) presence

on Facebook and other social networking sites, (2) the main purpose of creating the account, (3) frequency of access and devices used to access Facebook, (4) current means, prospects, and preparedness of using Facebook in education and (5) perceptions of using a faculty administered Facebook Group or Page in education.

The frequency of access to Facebook was scaled a "few times a day," "every hour," a "few times an hour" and "lost count as I am receiving push notifications." Regarding the medium of access to Facebook, the following devices were listed: laptop, smart phone, tablet PC and desktop.

Students were asked about the purposes of using Facebook in general and about their current educational usage of a Facebook account in liking Pages with educational themes, participating in medical/educational Groups and contributing by posts. Student perspectives on using Facebook in education were tested by asking them to rate on a Likert scale, ranging from strongly disagree to strongly agree, the following statements: (1) Facebook can be used as a suitable learning environment, (2) Facebook can be a distraction, (3) Facebook is more accessible than other ways of communication with my professor and colleagues, (4) I am aware of privacy settings on Facebook that limit access to personal information, (5) It is an inviting atmosphere that encourages me to participate.

Regarding their perceptions of using the Histology Group and HAE Page, students were asked to rate on a Likert scale their preferences for each post category, effectiveness of the Group or Page and the way the Group or Page contributed to their learning experience.

Analysis of the Results

A total of 63 students at UO and 157 students at UoS participated in the survey. The majority of students (96%) had presence on social networking sites, with a predominance of Facebook users (100%, $n=63$ at UO and 89%, $n=139$ at UoS respectively) followed by YouTube users (43%, $n=27$ at UO and 57%, $n=89$ at UoS). Twitter and Instagram came in third place at UO (31%, 30%, $n=20$ and 19 respectively). At UoS, Twitter also came in third place (50%, $n=78$). Other social networking sites followed as shown in Figure 1.

Of the devices which students ranked as being used a lot to access Facebook, the most common device was the laptop (45%, $n=59$ at UO and 50%, $n=77$ at UoS). Other devices were smartphones (34%, $n=44$ at UO and 25%, $n=38$ at UoS), tablets (16%, $n=21$ at UO and 19%, $n=30$ at UoS) and desktops (5%, $n=7$ at UO and 6%, $n=10$ at UoS). Regarding the frequency of access to Facebook, 51% of students, ($n=32$) at UO and 39% ($n=56$) at UoS logged into their accounts a few times a day, while 33% ($n=21$) at UO and 39% ($n=56$) at UoS received push notifications, as the account is always running on their mobile devices.

Ninety-seven percent of students ($n=61$ and 152) at UO and UoS, respectively, stated they were familiar with Facebook Groups and Pages for social purposes such as keeping in touch with friends. Regarding the current means of using Facebook in education, 67% ($n=42$) at UO and 96% ($n=133$) of the students at UoS have found means of using Facebook in education by liking Pages with educational themes, contributing with posts and participating in medical/educational groups.

Survey on the Use of Facebook in Anatomy Education

Informed Consent

By agreeing to this Informed Consent statement I declare the following:

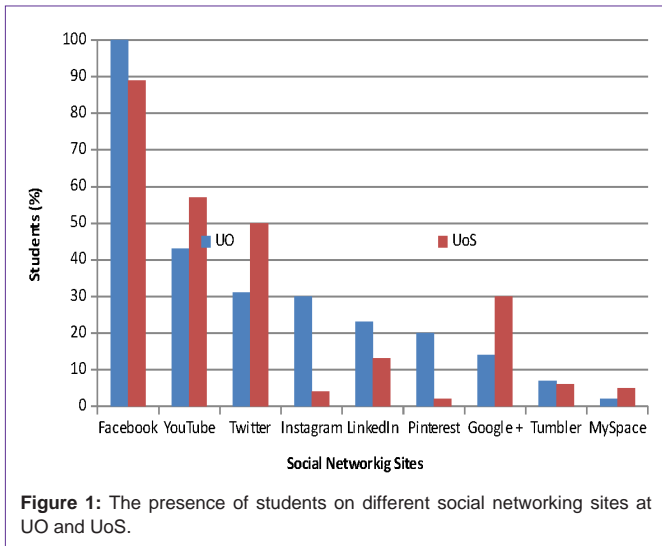
- * I voluntarily participate in this anonymous survey.
- * I know that any statement I make in this form cannot be punished by the tutor or the university.
- * I have read and understood all content of survey form.

I agree to the Informed Consent						
1	I am	♀		♂		
		<70%-74.9		75-84.9%		>85%
2	My last semester average was					
3	I have an account of social networking sites on					
A	Facebook	F	YouTube			
B	Twitter	G	WordPress			
C	Linkedin	H	Pinterest			
D	Myspace	I	Tumblr			
E	Google+	J	None			
Others (please specify)						
4	I am using my Facebook account for the following educational purposes	Not at all	Little	Average	A lot	Very much
A	Following pages with educational themes					
B	Participating in medical/educational group discussions					
C	Contributing by posts					
D	Others (please specify)					
		Never	< 1login /day	1-5 logins/day	>5 logins/day, it is always running on my device, I receive push notifications	
5	Frequency of access to Facebook					
6	Devices I use to access Facebook	Not at all	Little	Average	A lot	
A	Desktop					
B	Laptop					
C	Tablet PC (iPad, Galaxy tab, etc)					
D	Smart phone					
E	Others (please specify)					
					Yes	No
7	Have you been to Human Anatomy Education Page on Facebook?					
8	I like the following Human Anatomy Education Page posts	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
A	Assessment					
1	MCQs with poll options					
2	MCQs with pictures					
3	Short answer questions					

B	Videos and video links					
C	History of anatomy					
D	Art and anatomy					
E	Jokes and funny postings					
F	Contributions of other fans (colleagues)					
G	Links to online anatomy resources					
H	Explanatory comments					
I	Books recommendations					
J	Others (please specify)					
		Poor	Below average	Average	Very good	Excellent
9	Overall, I rate Human Anatomy Education Page as					
10	Please rate the following statements on the use of Facebook in education at university level	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
A	Facebook is a suitable learning environment at university level					
B	The benefit of Facebook as a learning environment exceeds the harm					
C	I would like tutors to interact with and contact me via Facebook for formal teaching purposes					
D	I am aware of / I am using privacy settings on Facebook that limit access to personal information?					
E	I feel safe to express my opinion freely on a public Facebook page administered by a faculty member					
11	How does Human Anatomy Education Page help you to learn anatomy?	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
A	Communicate with tutor on academic matters					
B	Communicate and discuss with colleagues on issues posted on the Page					
C	Increase understanding and foster deeper learning					
D	Make anatomy learning more interesting and challenging					
E	Assessment tool to improve exam self-confidence					
F	Widening knowledge of general issues in relation to anatomy					
G	Others (please specify)					
12	Comments & suggestions					

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Thank you for participating in the survey



Page post categories were ranked according to the percentage of students who agreed/strongly agreed that they liked them. The most popular post category in both the Group and Page was self-assessment. Figure 2(a) shows the histology Group post categories arranged in order of percentage of students who liked them and Figure 2(b) shows the same for in-class students who rated HAE Page post categories.

Seventy-seven percent (77%, n=48) would recommend the FB group to their peers, and 62% (n=39) stated that they have friends who refuse to use Facebook mainly because of distraction.

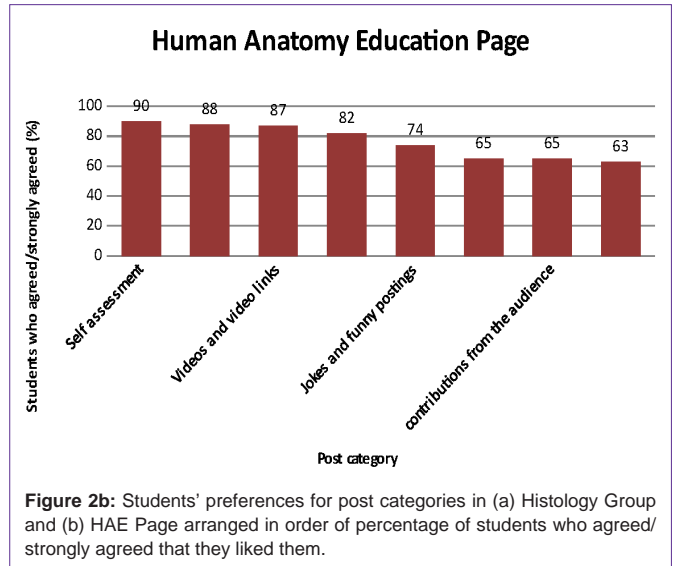
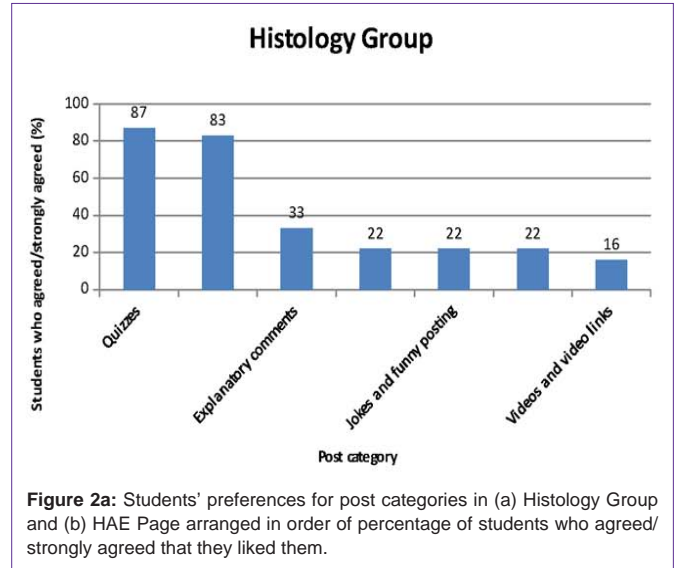
Ninety-seven percent (97%, n=61) stated they were familiar with Facebook Groups and Pages, with no preference for one over the other (49%, n=31), and 68% (n=43) stated that Facebook was not used by any other professor as a teaching tool.

Regarding the HAE Page posts, the Insights tool revealed that the three most commonly user-engaging posts categories were jokes and funny postings, explanatory comments and contributions of the audience. The ratings of other post categories were in the order of art and anatomy, history of anatomy, self-assessment, videos and video links and book/article recommendation.

Discussion

The use of social networking sites for educational purposes is now well accepted and has been employed on a variety of platforms [11-13]. Facebook, being the most widely used social network, is the logical place to start with for integrating social media into education. Additionally, Facebook may prepare medical students to go on to use more professionally oriented social networking sites for lifelong learning and communication [14].

Timeline (personal profiles), Groups and Pages each have different purposes and strengths that can be taken advantage of in order to provide the best venues for engaging students within the online community [15]. Taking into account the variety of options provided by Facebook, the decision as to which Facebook tool to use becomes intriguing. Both Facebook Pages and Groups provide ways to enhance classroom teaching without intruding into students' social lives by friending them.



The current study showed that the majority of students had presence on social networking sites. Facebook, being the most popular site, was used mainly to communicate with friends, followed by its use for medical education purposes. Laptops and smartphones are the two most common tools used to access those sites.

In this study, Facebook was used as a complimentary platform to enhance education; thus, Group membership or Page participation was not compulsory. Most of the students were familiar with Facebook Groups and Pages; they perceived both as improving their learning experiences. From the student's point of view, there is no clear preference for a Group over a Page. Thus, making use of Facebook in medical education by running a faculty-administered Group or Page entails recognizing your goals and understanding the capabilities and limitations of the options offered by each.

A user is capable of liking a Page and becoming a fan in order to receive updates which appear in News Feeds. Fans of a Page are unlimited and cannot be identified unless they are engaged with a like, comment or share, and they can follow the Page under a fake identity, while in joining the Group, identity is disclosed, and there

is some limitation on the number of members. Page information is public and generally accessible to an unlimited number of fans and audience members who can interact with a Page much in the same way they can interact with another user. Facebook Groups are the place for small-group communication in which more privacy settings are available. The privacy settings can be set as open, closed or secret. Thus, when you create a Group, you can decide whether to make it publicly available for anyone to join or keep it private and by invitation only. Similar to posts to Pages, new posts by a Group are included in the News Feeds of its members, who can interact and share with one another from the Group. When a Group reaches 5000 members, some features are removed, such as messaging all members in bulk or inviting them to an Event.

In an educational context, a Group would be more suitable for serving the objectives of a single course throughout a specific time interval. On the other hand, a Page can serve a wider audience in terms of both time and place. A Page can include posts that do not necessarily obey specific course due dates; thus, a Page can continue serving audience and become a resource of continuing education for basic medical sciences during the clinical years and afterward.

In a Group, students collaborate and interact within the same Group. However, in a Page, students can engage with peers apart from the in-class students. This might enhance the educational experience not only beyond the traditional classroom, but also would allow students to interact with others from corresponding faculties in different countries.

One or more administrators can manage both the Page and the Group. Depending on the settings, the administrator may be the only one who is capable of sharing posts under the Page or Group name, approves members to be added to the Group, and is able to use the Insights tool to track Page growth and activity. The latter feature is not available for Groups [4].

The availability of Insights is an important advantage for the instructor administering a Facebook Page over a Facebook Group. The Insights tool allows the administrator to track Page growth and interactions and learn about the audience. However, the exported data from Facebook Insights are overwhelming and need to be refined [16]. In educational Pages, Post Clicks should be mostly addressed as an engagement parameter since it reflects the total number of clicks; adding to it, the numbers of likes, comments and shares all reflect a detailed account of the interactivity of the Page [6].

Insight metrics are not available in a Group, but engagement parameters (liking and commenting) can be obtained for each post on an individual basis. In addition, the number and identity of members who saw the post are disclosed. In spite of the lack of detailed statistics, the limited metrics can provide an objective reflection of what students prefer to be posted.

In this study, the in-class students in both the Group and Page were more concerned about formal aspects of learning such as assessment tools, revision files and explanatory comments. On the other hand, the HAE Page audience was mostly engaged in post categories such as anatomy-related humor, history and arts in relation to anatomy. The general Page audience was much more numerous than the number of in-class students. The audience was

internationally distributed and might not follow the same syllabus as that of the in-class students. Hence, the general audience was less engaged informal learning posts which were timed to be in synchrony with the objectives of the in-class courses. The engagement of the general audience reflected the perception that a Facebook Page could be a platform for informal aspects of learning and would serve as a source of continuing education.

One of the advantages of a Group is that one can create group documents and upload and share files. In a Page, sharing of files can be compensated for by providing links to collaborative services such as Google Drive and other "Cloud" applications where such files can be hosted.

Students agreed that using Facebook in education could be a suitable learning environment, but there were concerns about distraction. For students who want to minimize the distraction issue while using Facebook for education, Pages with a similar theme can be included in Interest Lists. This will provide direct and timely access to Pages' posts without the inherent "distraction" that might arise while going through the entire Timeline. Members of a Group, while not being able to put multiple Groups into a list, can still focus on certain Group posts by directly linking to the Group from the Home view without the necessity of going through the News Feed. Similarly, Page fans as well as Group members can choose to be notified whenever a new post is uploaded. They can thus directly review their notifications without the need to browse the entire News Feed.

One of the advantages of a Group is the possibility to search for a term within the posts. This facility could be quite helpful for students when they want to rework specific content, particularly at the time of revision before examination. This search option is not available in a Page.

Although a faculty-administered Facebook Page or Group does not necessarily require friending students, their integration into the teaching and learning process can still impose the privacy issue as an obstacle. Fans of a Page cannot be identified if they click on a post unless they are engaged with a like, comment or share. They can also follow the Page under a faked identity. On the other hand, to join a Group, the administrator would like to disclose the identity of the applicant before granting membership, particularly in a closed Group. Some students might not be comfortable with this privacy trespassing. Moreover, unlike with a Page, all Group members who see the post can be identified, even if they are not engaged with the post.

Pempek et al. [17] found that Group membership is one of the problems to be focused on. They proposed that joining a Facebook Group does not guarantee active participation in the Group. Students may join due to demands, but they do not perform and participate in the Group discussion to enhance their learning as some researchers might expect. This, too, can be seen from a study done by [18] who found that most of the students were reluctant to give participation and comments to their friends in the Group, although the discussion Group on Facebook was created for the students to promote interaction. This is in agreement with the current 2% engagement rate. On the other hand, 86% of Group members saw the posts, on average. The issue of engagement has been also raised in the marketing arena on Facebook. As a benchmark, it is suggested that

above 1% engagement rate is good, 0.5%-0.99% is average and below 0.5% engagement likely means that you need to realign your messages to your audience's expectations [19].

Both students using the Anatomy Page at UoS and members of the Histology Group at UO stated that Facebook was a time-effective method of communication providing easy access to the learning material; it enhanced their learning experiences and was an inviting atmosphere to participate in, with self-assessment questions being the most popular post category.

Conclusion

The Human Anatomy Education Facebook Page and Histology Facebook Group embodied many of the top principles of successful e-learning [20]. They provided learner engagement and motivation. They were effective by encouraging collaboration, exhibiting multiple perspectives on anatomy and histology and providing some degree of learner agency. They provided formative assessment that was aimed at improving learning by providing feedback and opportunities for peer assessment. It was matched with the anatomy curriculum at UO and UoS. Facebook can be considered as an innovative approach that brought educational material to the learner's News Feed. According to the same principles of successful e-learning, it was inclusive, easy to use and time- and cost-effective.

Pages and Groups are equally accepted by students because they seem to be equally effective in enhancing the learning experience. Innovative instructors are required to experiment with ways to bring this familiar environment to the classroom. This entails an understanding of the capabilities and limitations of the Page and Group which has been thoroughly discussed in this study. Facebook should not only be used because students are embracing this new trend in technology but for its inherent potentials in boosting e-learning. Further research should be carried out to explore reorganizing the educational process and developing modules that bring more social interactions into the arena of traditional learning.

The development of new teaching technologies and their implementation in the biological sciences are inevitable and are already progressing at a rapid speed. It will remain our responsibility as educators to efficiently coordinate them with traditional teaching methods and to integrate them into existing curricula for the benefit of our students. Our students are willing and prepared to embrace these new technologies. Are we, as their teachers, equally ready?

Notes on Contributors

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