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Innovative Integration of Facebook Groups in Biomaterials Course: Perception of Dental Students

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ABSTRACT

Background: Calls for incorporating Facebook into the academic process to achieve educational purposes were done since more than 10 years. **Objectives:** This study was designed to assess the perception of the dental students towards the use of Facebook in learning of the Biomaterials course and to determine if there is a gender-based difference in the students' perception. **Subjects and methods:** This cross sectional study was conducted on the 3rd year undergraduate dental students, at one of Saudi universities during the academic year 2016-2017 using a self-administered questionnaire that was distributed to all students with a response rate 100%. Data was analyzed using the SPSS version 16. **Results:** The female students were significantly more satisfied with the course than the male as they wanted to use Facebook to study the other topics of the Biomaterials course (p=0.01) as well as to study the other subjects (p=0.012) and they thought that Facebook can be used for scientific discussion (p=0.01).The willing to use Facebook in future learning was high among the female students but with no significant difference between both males and females. It was unexpected to find low agreement score among the participants on their preference to have assignments, movies, feedback or even reminders on Facebook with no significant difference between males and females. **Conclusion:** Integrating learning through Facebook groups into the dental courses was generally well-perceived among the dental students and specifically accepted for the Biomaterials course. Students were willing to apply such model in other dentistry subjects. Further investigation of the impact of the approach on students' performance is recommended.

Keywords: Facebook groups, Dental Students, Biomaterials, Survey-Perception.

1. INTRODUCTION

Online social networking is considered the most common way of communication between students to share personal and professional information. It allows students to learn, improve their knowledge and improve their communication skills (1). Social networking sites such as Facebook have attracted hundreds of millions of users worldwide and more than 80 % of teens and young adults in the U.S. (2). Most of students at university age, known as Generation Y (Gen Y), are much better than their teachers in technology practice (3). It was stated that "University life without Facebook is almost unthinkable" as shortly after being launched in 2004, it rapidly became a common and basic tool for social communication among the students (4).

Engagement with social media can be "personal, professional, or both, and there is plenty evidence that digitally-savvy adults and youth use social media for health-related information" (5).

Online social networking use is greatly higher amongst medical professionals, and medical schools have even reported disciplinary student expulsion as a result (6). Twenty (1.7–54%) of the respondents in a meta-analysis used social networking sites for academic and educational purposes (7). Facebook differs from other social media tools as it offers a variety of different interaction tools, like "communication features (e.g. walls, groups), sharing features (e.g. possibility of uploading videos, photos and documents) and information features (e.g. news, feed)" (8).

Mazman and Usluel categorized the undergraduate students' educational activities on Facebook into four classes: "reflecting on university activity, ex-

change of practical information, exchange of academic information, and display of supplication or disengagement" (9).

Facebook groups were described to allow an easy organization of individuals with related interests. They provide a student-centered channels ideally suited for peer-generated content, peer-to-peer communication, and learning and interactive support, combined with social aspects such as peer-mentoring and personal interaction and bonding (10).

Many researches have described different methods to utilize social media in distance or online teaching. It was stated that 'if a course is properly designed, and its learning outcomes are accurately well-defined, then social media can be effectively utilized". However, it should be linked to relevant activities that help students achieve these learning outcomes. Moreover, social media is a key and accessible method for delivery of information as well as for assessment of students learning (11).

One of the interesting studies conduction of dental students and described the impact of Facebook use on them showed that "excessive involvement of dental students in mobile texting and Facebook may affect the student's performance during clinical or surgical procedures, practice and patient interactions, and performances on exams" (12).

Although few studies noted that "Facebook might be an effective learning and teaching environment if set up in a thoughtful and structured way" (13), using Facebook as learning tool has been evaluated only in a limited way in the dental education context. Therefore, this study was designed to assess the perception of the dental students towards the use of Facebook in learning of the Biomaterials course and to determine if there is a gender-based difference in the students' perception.

2. SUBJECTS AND METHODS

Settings

This study was conducted on the undergraduate dental students in the 3rd year at the Faculty of Dentistry, KAU, Jeddah, Saudi Arabia during the academic year 2016-2017.

Course design& implementation

The Biomaterial course was developed to be a hybrid traditional/online course offered all through the academic year for the 3rd year dental students. It included a set of traditional lectures and practices along with an online active part provided through Facebook, one of the commonly used social networking sites by the dental students. Before starting the course, two Biomaterial course Facebook groups were constructed; one for male and the other for female students. All the students were instructed to login to the Facebook groups at the beginning of the year.

During conduction of the course, and after each lecture, the related study materials that included the presentations, handouts, videos, assignments as well some questions on the lecture contents were all posted on the Facebook group. Students entrance to the groups was required part of the course. Students should answer the posted questions on each lecture and submit the assignments before the deadline in order to be graded otherwise he/she would lose their marks. Final formative test questions was also posted on the groups before the mid-year, the practical exam and end of year exams and the students were required to answer them in order to take the final summative course exam.

Data collection tool

A self-administered questionnaire was utilized in this cross sectional study in order to assess the perception of the third year dental students about the use of Facebook groups as a learning aid during conduction of the Biomaterials course. The questionnaire included some questions asked about the demographics of the students. The questionnaire included also another two sections with questions asked about students' perception towards using Facebook for learning in biomaterial course and their future practice towards using Facebook for learning in other courses.

The questionnaire was distributed to thirty students to fill in order to evaluate its readability and face validity. It was revised in the light of students' feedback on the clarity of the questions. Finally, it was distributed, as hard copy, to all third year male and female students who were asked to fill it anonymously.

Ethical considerations

This study was approved by the biomedical research ethics committee at the Faculty of Dentistry, king Abdulaziz University (KAU), Jeddah, Saudi Arabia.

Statistical analysis

Data acquired from the participants through the questionnaire was analyzed using the Statistical Package for the Social Sciences (SPSS) version 16. The results of the categorical variables were presented in the form of mean and standard deviation. Significance was considered at $p<0.05$.

3. RESULTS

In this study, the questionnaire was distributed to all the third year dental students (210 students) and all of them responded and filled the questionnaire with a response rate 100%. The majority of the participating students in this study was between 20 and 22 years while 27.6 % of the participants were between 23-25 year (Figure 1).

Variables	Male Mean±SD N=83	Female Mean±SD N=127	T test	Total	P value
Do you want to use Facebook for other Biomaterials topics?	2.99±1.42	3.53±1.32	2.65	3.31±1.45	0.009*
Do you want to use the Facebook for other subjects?	2.99±1.18	3.09±1.18	2.59	2.87±1.47	0.012*
Do you think the Biomaterials group can be used for scientific discussion?	2.48±1.16	3.02±1.16	2.62	2.8±1.45	0.009*
Did you benefit from the questions posted in the Biomaterials group?	3.31±1.38	4.41±1.31	0.44	3.38±1.34	0.65
Did you benefit from the movie posted in the Biomaterials group?	3.31±1.45	3.47±1.40	0.78	3.41±1.42	0.43
Did you memorize the questions posted on the Biomaterials group?	3.27±1.38	3.52±1.31	1.31	3.42±1.36	0.19

Table 1. Perception of students towards using Facebookfor learning in Biomaterials course.. *significance at p<0.05

The perception of the students towards the use of Facebook in learning of Biomaterials was assessed. It was observed that the female students were significantly more satisfied than the male as they wanted to use Facebook to study the other topics of the Biomaterials course (p=0.009) as well as to study the other subject (p=0.012) and they thought that Facebook can be used for scientific discussion (p=0.009). Although the female students were more satisfied with the benefits of the questions and movie posted on the Facebook compared with the male students, the difference between them was of no statistical significance (Table 1).

Variables	Male Mean±SD N=83	Female Mean±SD N=127	T test	Total	P value
Would you like to use Facebook as a learning tool	2.96±1.59	3.52±1.35	1.82	3.19±1.49	0.07
Would you like to have handouts on the Facebook group?	2.47±1.27	3.02±1.4	2.75	2.9±1.48	0.006*
Would you like to have assignmentson the Facebook group?	2.72±1.19	3.02±1.44	1.19	2.74±1.44	0.32
Would you like to have topics & related movies on the Facebook group?	2.84±1.45	2.67±1.38	1.36	2.88±1.47	0.174
Would you like having Feedback on the biomaterials group?	2.73±1.44	2.98±1.47	1.20	3±1.46	0.231
Would you like having reminders and updates on the group?	2.83±1.48	3.11±1.44	1.36	3.3±1.38	0.174
Do you think the biomaterials group on Facebook made the topic easier to study?	2.67±1.46	3.18±1.36	2.52	2.98±1.42	0.002*

Regarding the future practice of the use of Facebook in learning, it was noticed that the willing to use Facebook in future learning was high among the female students but with no significant difference between both males and females. On the other hand, the agreement of the willingness to have hand-out on the Facebook group was significantly higher (p=0.006) among the females compared with the male. Another agreement was reached among the female students about that "Biomaterials group on Facebook made the topic easier to study " as the score of agreement was significantly higher (p=0.002) among females. It was unexpected to find low agreement score among the participants on their preference to have assignments, movies, feedback or even reminders on Facebook with no significant difference between males and females (Table 2).

4. DISCUSSION

Facebook is considered a primarily personal social network however can affect a wide range of medical education domains. "These include issues of online learning and teaching environments with and without faculty involvement, digital professionalism as well as pedagogical strategies to teach digital professionalism" (14). Cheston et al. reported that social media can improve collaborative learning and engagement (15). Among the conclusions reached by Gray et al. after their study of Facebook's use among Australian medical students was that Facebook could be used for educational purposes (16). When it came to the social media in dental education domain in specific, Oakley and Spallek suggested some best practices of using the social media in this domain. They also defined the impact of social media in health care setting emphasizing some opportunities and challenges that exist (17).

Facebook is considered the main online social networking site worldwide. Statistics show that Facebook use is highly prevalent amongst a majority of users aged 18–24 years old (18). This is consistent with this study where the majority of the participants was between 20 and 22 years. In this study, about 60% of the respondents to the questionnaire were females which indicating their interest in participation in such studies. This observation was reported also by Adithya et al. during their study of the use of social media among the Indian dental students (19). They found that about 62% of the respondents to their study were females. Lee et al. recorded the same observation during their study of the health impacts of Facebook usage on undergraduate Malaysian dental students. They noted that the majority of respondents (about 64%) were females (12).

In this study, it was noticed that the participating dental student specially the females were satisfied with the use of Facebook in learning Biomaterials and were willing to use it in studying other courses. MacDonald et al. reported that Facebook is generally well accepted as a learning and teaching environment by the undergraduate and graduate medical students (20). They added that "students used open or closed Facebook groups to prepare for exams, share online material, discuss clinical cases, organize face-to-face sessions and exchange information on clerkships".

Alshiekhly et al. have assessed effectiveness of Facebook application as a teaching medium of a course in medical emergencies in dental practice offered to dental students at the Faculty of Dentistry, Damascus University, Syria (21). They found that Two-third of students decided that Facebook was useful in learning medical emergencies in dental practice course. Moreover, 92.8% encouraged the use of electronic learning in dentistry. In this study, about 70% of the participants were willing to use the Facebook for other study subjects and considered the Biomaterials groups appropriate for scientific discussion which demoting that most of them were satisfied with the course.

In this study, and during conduction of the Biomaterials course, the related study materials like handouts, videos, assignments were posted after each lecture on the Facebook group. This could be behind the observed students satisfaction with the course. Haag et al., and Schleyer reported that providing materials in an online format offers many benefits to the dental students as "they can learn at their own pace, review material repeatedly and study at a time and place convenient to them" (22, 23).

The importance of feedback in medical education has been previously described. Social media can be used easily and comfortably to provide the students with a feedback on their performance (24). Unfortunately, in this study, the agreement score among the participants on their preference to receive feedback on Facebook was low with no significant dif-

ference between males and females

It was noted that about 80% (3.31±1.45) of the participating students generally liked to use Facebook as a learning tool. This percentage was much higher than what was reported by the Indian dental students (about 55% of the participants). This might be attributed to the problems they reported on using the social networking sites like problems of privacy (31.97%), security problems (18.85%) students and information literacy problems (14.75%) and cyber-bullying problems (8.20%) (19). George reported that pre-existing social connections and academic leadership are crucial for effective use of Facebook learning groups through committed students or guiding faculty. He added that undergraduate students might not be satisfied with formal involvement of faculty in the informal setting of Facebook (13).

In this study most of participants reported that they got benefited from the questions (about 85%) and movie (about 86%) posted on the Biomaterials group and about 86 % said they memorized the questions posted there. These findings were supported by those of Pilcher who assessed the perception of the first year dental students towards Fixed Prosthodontics online course format (25). They noticed that "most students using the online materials of this course found them either helpful (16%) or very helpful (80%)".

In this study, about 80% (3.19±1.49) of the participating students liked to use Facebook as a learning tool. This is a high encouraging percentage as in a previous study only 30% of surveyed students would accept and participate in a formal Facebook course (26).

In this study, about 75% of the participating students thought the Biomaterials groups on Facebook made the topic easier to study. This perception could be explained in the light of a previous study revealing that "the use of social media can be implemented among dental students to include topics sometimes not covered in a dental school curriculum, to expand students' perspective, and to satisfy the need for lifelong learning (27). These findings were also supported by Sweet et al. who stated that "dental students have utilized Facebook applications to prepare one another for objective structured clinical examinations (OSCEs) (28).

It was reported that "the scientific knowledge in dentistry is doubling every five years" (29). Therefore, "life-long learning through social media may be a good medium for practitioners to update information and discuss clinical cases with colleagues"(30).

5. CONCLUSION

Integrating learning through Facebook groups into the dental courses was generally well-perceived among the dental students and specifically accepted for the Biomaterials course. Students were willing to apply such model in other dentistry subjects. Further investigation of the impact of the approach on students' performance is recommended.

- **Limitations of this study:** this study as most of the previous studies conducted to assess the efficacy of Facebook on students learning were qualitative one and depending on surveys. Our future plane is to implement a quantitative study that uses quantitative tools to correlate the use of Facebook in learning with dental students' scores in exams. Another limitation is that the part included in the Facebook medium was the theoretical aspects of the Biomaterials course only which did not enable students to include the practical skills into their practice.

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