

Use of Facebook as a pedagogical tool for university education: student adherence and reactions

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Received: 02/05/2021. Approved: 11/02/2021.

ABSTRACT

This study aimed to analyze Facebook's use as a pedagogical tool for teaching didactics for graduate students in Dentistry. Seventy-two adult students participated in this study. These students attended theoretical classes, developed practical activities by Facebook, and evaluated the course through a questionnaire. Tasks were analyzed concerning the following criteria: time to respond to assignments and whether they have been finished or not. Additionally, post type and students' reactions to posts were also evaluated. Forty-three (59.8%) students have considered Facebook as a good pedagogical resource. Only 5 (22%) students answered that they had some difficulty in responding to the assignments of the course through Facebook. Most students completed their tasks through Facebook. However, in general, most students only fulfilled the assignments close to the deadline. The main reactions of the students were likes and comments. Despite its limitations, Facebook seems to be a great pedagogical resource to be inserted in post-graduate education. In addition, the students still show little participation even being in the virtual environment of Facebook.

Descriptors: Teaching. Teaching Materials. Education, Higher. Social Networking.

1 INTRODUCTION

Currently, most university students in Brazil and the World are part of the so-called Net generation (also called digital natives or millennia). These terms have been used to define the cohort of young people born between 1982 and 1991 that grew up in an environment in which Information and Communication Technologies (ICTs) became an integral part of daily life¹.

These young people grew up with computers and the Internet. In this way, theoretically, they present a natural aptitude and high levels of skill when using the new technologies. On the other hand, individuals of previous generations have been considered to be at least one step behind the Net generation. This fact has contributed to the creation of new learning approaches. In addition, this new generation requires quick access and rewards.

Individuals of the Net generation individuals are impatient with linear thinking and exhibit new abilities to develop multitasks².

Today, various efforts have been made to routinely use information technology in education. It is known, however, that this will not yield satisfactory results if a pedagogical practice is not re-evaluated³. In general, digital natives seek information more dynamically and more widely. In this way, they have challenged traditional teacher-centered education. Currently, the new coronavirus infection pandemic has led to changes in teaching practices at all level⁴. In this way, technology and distance learning has a positive impact and can be implemented to facilitate the learning process of students⁵.

The development and advancement of social media have allowed an improvement in interpersonal communication in various areas of knowledge and even in the field of health sciences⁶⁻¹¹. Media that has been widely used by the young population are so-called social networking sites.

Social media can be divided into 10 categories: 1) blogs (WordPress), 2) microblogs (Twitter), 3) social networking sites (Facebook), 4) professional networking sites (LinkedIn), 5) thematic network sites (23 and ME), 6) wikis (Wikipedia), 7) mashups (HealthMap), 8) collaborative filtering sites (Digg), 9) media sharing sites (YouTube and Slideshare) (SecondLife)¹². Facebook is considered the most used social network in the world. Approximately 2.07 billion people use Facebook every month¹³. India, followed by the US and Brazil, represent the countries with the largest number of Facebook followers. Facebook was launched in 2004 at Harvard University. This social network was created to facilitate the process of socializing the students of that institution¹⁴. According to its creators, Facebook's mission is to give people the

power to build community and bring the world closer together¹⁵. According to Pander *et al.*¹⁶, Facebook differs from other social media tools by offering a variety of different interaction tools, such as communication resources (walls and groups), sharing of resources (uploading of videos, photos and documents) and information resources (posting news).

Facebook is one of the most popular social networking sites for college students^{1,7}. However, concerning educational use, Facebook is more valued among students as a platform for exchanging information related to the course, for creating academic groups (communities) and for mutual collaboration¹⁸. Some studies have revealed that the most health students have resorted to the use of online and social media as their main source of information search^{11,19-20}.

Mazman and Usluel (2010)²¹ developed a structural model that explains how users could use Facebook for educational purposes. These authors concluded that adopting Facebook for educational purposes has a significant positive relationship to its utility, ease of use, social influence, facilitating conditions, and community identity. Thus, some teachers have used Facebook's resources as a pedagogical tool to increase students' interest in classes²². On the other hand, it is believed that the exaggerated use of Facebook may also contribute to a high level of extraversion, low self-esteem, neuroticism, and narcissism²³. Frequent use of this social network is also associated with lower academic performance, but possibly with a greater sense of belonging.²³⁻²⁴ The results of a meta-analysis developed by Sutherland and Jalile (2017)²⁵ have shown that there is a lack of research and evaluative work that has employed methods for a deeper understanding of the potential impacts of social media on the training of health professionals. Based on this context, the objective of this study was to analyze the use of

Facebook as a pedagogical tool for the teaching of didactics of the postgraduate in Dentistry.

2 METHODS

The present study was approved by the Research Ethics Committee of the Health Sciences Center of the Universidade Federal do Paraná (UFPR), (Protocol number 2.421.501).

The population of this study was composed of students enrolled in Didactics and pedagogical strategies in higher education of the Postgraduate Program in Dentistry of UFPR.

Seventy-five adult subjects of both sexes and regularly enrolled in Didactics and pedagogical strategies in higher education participated in this study.

Didactics and pedagogical strategies in higher education is a compulsory 45-hour course that was offered for students of the Graduate Program in Dentistry at UFPR. In this discipline, the students attended theoretical classes and developed practical activities in the classroom individually and in a group. In addition, each student received weekly activities to be developed through the internet to sediment the contents taught in the course (compulsory activities). For this, a group was created in the social network Facebook that allowed the interaction between teacher and student. In this group, the responsible teacher posted weekly information (news regarding the recruitment of teachers by universities, and information on future scientific events or courses), tasks (which involved reading articles, texts and chapters of books and also the analysis of cartoons and videos), photos and additional materials. After posting, students were asked to discuss, in the Facebook forum, the topic related to each task (activity). The students had seven days to complete each task using Facebook.

Students were informed about the study and invited to participate after the course was

completed. Then, they signed the Term of Consent and were included in this study. All students answered a questionnaire that evaluated the discipline, and also, about the use of Facebook as a learning tool. The questionnaire used consisted of questions for the collection of personal data (gender, age and time of formation in higher education), how the students had access to the Internet when they performed the tasks and another 20 questions with 5 Likert-type responses. Of the 20 questions, only 6 questions were used to assess the use of Facebook during the course.

An evaluator analyzed the tasks of the students through the Facebook group postings. The following criteria were used for analysis: 1) accomplishment of the task (partial, complete or not) and 2) time used by the student (accomplishment of the task in or out of time). Finally, the postings were also analyzed about the reaction of the students (number of manifestations of “likes”, “love”, “haha”, “sad”, “surprised”, “angry”, views, and their comments).

The data collected were tabulated in an Excel worksheet for Windows software and subjected to descriptive statistical analysis. Then, the results were expressed by means and percentages.

3 RESULTS

Of the total of 75 students, only 72 participated in this study because three students were excluded from the sample. One student abandoned the course in the second week of activities. Two other students stopped attending classes because they had previously attended a similar course and only one student did not respond to the questionnaire at the end of the course. The profile of the sample revealed that the majority were female, in the age group between 26 and 35 years and with up to three

years of training in Dentistry. The details of the sample are given in table 1.

Table 2 shows the answers to the six questions about student opinion regarding activities developed through the Facebook group. After analyzing questions, the results revealed that 66 (92%) students already had a Facebook profile before attending the course. Forty-three (59.8%) students agreed that the tasks developed by the Facebook group were a good resource to complement the knowledge about didactics and pedagogical strategy. Most students (43.2%)

found it interesting to develop course activities through Facebook. Other students were indifferent (19.4%) in doing course activities on Facebook and 27 (37.4%) students did not find it interesting. Seventy (97.2%) students answered that the time to perform the tasks was adequate. Only sixteen (22.2%) students stated that they had some difficulty in developing activities through Facebook. Sixty-eight (94.4%) students responded that the themes developed by Facebook were relevant to their training as future teachers.

Table 1. Demographic profile of students (N=72)

Variables	N	%
<i>Gender</i>		
Male	31	43
Female	41	57
<i>Age</i>		
Under 25 years old	24	33
26 – 35 years old	35	48
36 - 40 years old	13	19
Over 40 years old	0	0
<i>College Completion Time</i>		
Less than 1 year	17	24
1 – 3 year(s)	27	38
3 – 5 years	13	19
5 – 10 years	4	5
More than 10 years	11	14

The questionnaire also showed that all students (100%) used their personal computers to carry out the tasks posted by the teacher in the Facebook group. In addition, they also took advantage of the use of tablets (9%) and smartphones (27%). No student has used the University's computers to access Facebook and

perform the tasks. Most of the students (73%) only completed the tasks on the Facebook group a few hours before the deadline. Three students (4.2%) responded to their task 4 days later and two students (2.8%) posted their task 2 days later. Only one (1.4%) student usually responded immediately to tasks in the Facebook group.

Table 2. Evaluation of course activities on Facebook by students (N=72)

Questions	Strongly disagree		Strongly disagree		Indifferent		Partially agree		Strongly agree	
	n	%	n	%	n	%	n	%	n	%
1. I was forced to sign in to a profile on Facebook to participate in the tasks of the course.	66	92	-	-	6	8	-	-	-	-
2. The accomplishment of tasks through Facebook group was a good resource to complement my knowledge in didactics and pedagogical strategy.	3	4.2	13	18.0	13	18.0	26	36.1	17	23.7
3. The activities developed via Facebook were interesting.	13	18.0	14	19.4	14	19.4	16	22.2	15	21.0
4. The time for carrying out the tasks by Facebook was enough.	-	-	1	1.4	-	-	1	1.4	70	97.2
5. I had difficulty to participate in discussions on activities by the Facebook group.	47	65.3	6	8.3	3	4.2	13	18.0	3	4.2
6. The subject studied by the Facebook group was relevant to my teacher training.	-	-	4	5.6	-	-	19	26.4	49	68.0

The 14 tasks carried out by the students using Facebook group were evaluated (If the activity was carried out on time). Figures 1 and 2 illustrate the results for these variables. Most students completed all tasks (figure 1). However, as the end of the course approached, some

activities were no longer completed. Most students did not read and discuss an article about the National Examination of Courses (mandatory task). In addition, only a small percentage of students posted their tasks after the deadline (figure 2).

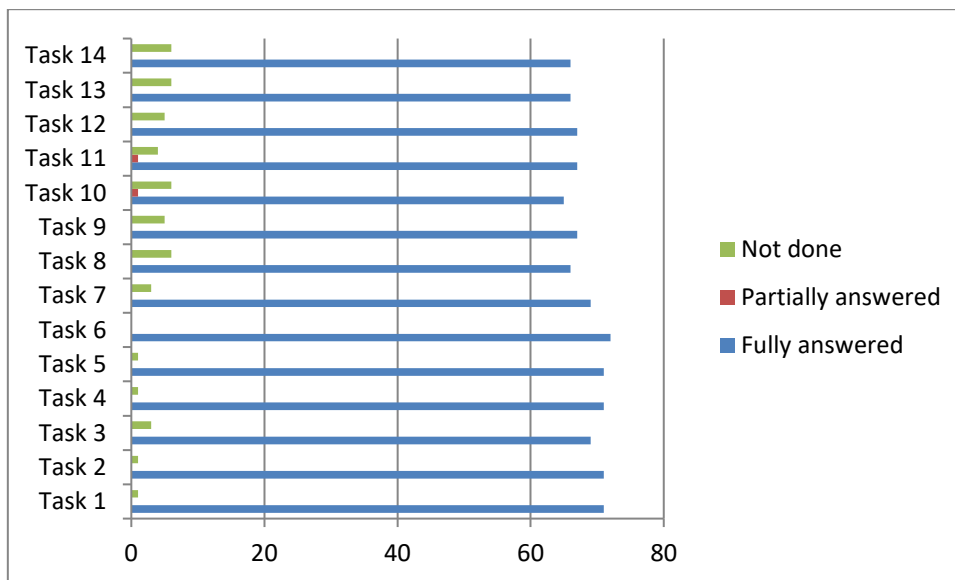


Figure 1. Fulfillment of activities by students using Facebook

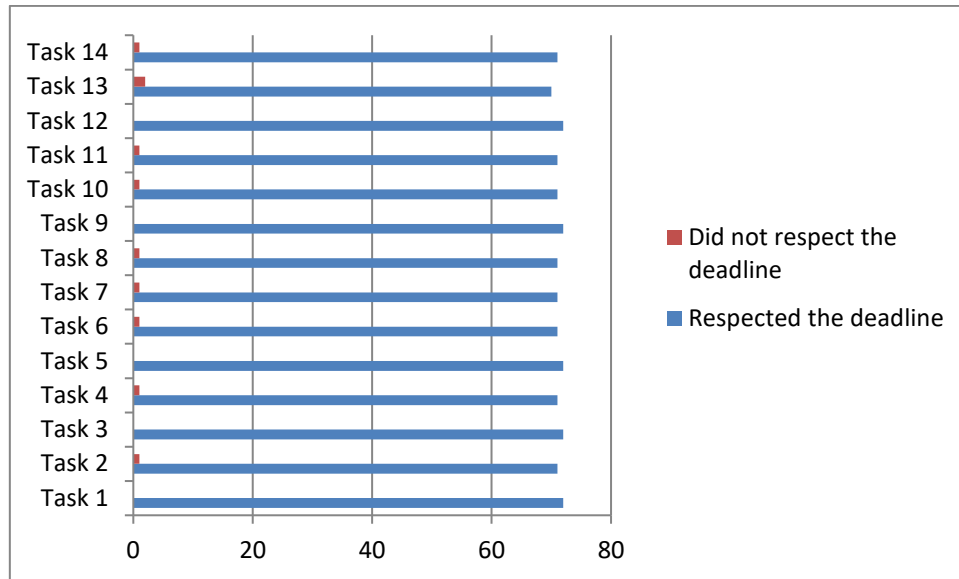


Figure 2. Time used by students to carry out their activities (tasks)

Ninety-three postings were made during the course (15 weeks). Of this total, 82 posts were made by the teacher and 11 by the students. Different types of postings were made by students and teachers throughout the course. The highest number of postings made in the group was made by the teacher and related to the availability of photos of the practical activities (24%), followed by the postings of the obligatory activities (14 posts) and the availability of complementary material such as articles, chapter of books and texts (15 posts).

The analysis of the reaction of the students regarding the accomplishment of the tasks showed that all the students visualized the postage (Table 3). On the other hand, the mean of “likes” and comments was 3.7 and 20.1, respectively. No other reaction was recorded.







The reaction of the students to the postage of photos taken during the practical classes had an average of 10.8 likes per post (Table 3). Most students accessed this type of post, but the number of other types of reactions was low. The use of the Facebook group to post information related to the development of the course (presentation or change in the timetable of the course, definition of

students to perform tasks, reminders for students to respect the time or activities) caused only the following reactions: “likes” (mean 7.0) and comments (mean 7.0) by the students. No other type of reaction was observed (table 3).

The professor also posted information related to events and processes for the hiring of professors by universities. These types of postings were called information disclosure. In addition, the Facebook group was used to share articles, texts, videos and chapter books to students through the Facebook group (called the posting of complementary material). An average of 21.6 students accessed these postings and elicited some reactions such as: “Likes”, “Haha”, “Love”, and comments (table 3).

The participation of students through supplementary material posting (article, text, video, book chapter and lesson plans) spontaneously was considered low (12 posts). Once again, a low number of reactions were recorded: “likes” (mean = 3.6), views (mean = 2.8) and comments (mean = 0.2). Surprisingly, two posts of complementary material by students received “likes” but had not been visualized (table 3).

Table 3. Students' reactions to Facebook posts during the course activities

Postings							Commented on the post x ± SD	Viewed the post x ± SD
	Like	Love	Haha	Sad	Wow	Angry		
	x ± SD	x ± SD	x ± SD	x ± SD	x ± SD	x ± SD		
Posting of articles by students (n = 2)	3.5 ± 0.7	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	1.0 ± 1.4	0 ± 0
Posting of complementary didactic material by the teacher (n = 15)	6.8 ± 3.8	0.08 ± 0.2	0.1 ± 0.4	0 ± 0	0 ± 0	0 ± 0	1.7 ± 2.3	71.6 ± 0.8
Posting warnings or general information (n = 6)	7.0 ± 3.3	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	7.0 ± 9.6	71.5 ± 0.7
Posting activities carried out at home by students (n = 10)	3.7 ± 2.2	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0.2 ± 0.4	70.2 ± 1.8
Posting photos taken of students during classes (n = 22)	35.8 ± 2.8	0.4 ± 0.5	0 ± 0	0 ± 0	0 ± 0	0 ± 0	1.2 ± 0.8	72.0 ± 0
Raffle of activities for students (n = 10)	6.5 ± 1.8	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	2.1 ± 2.4	71.0 ± 1.5
Weekly Task (n = 14)	3.7 ± 2.9	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	70.1 ± 7.2	72.0 ± 0
Discussion of tasks with students (n = 14)	7.0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	0 ± 0	72.0 ± 0
Posting deadline reminders for students (n = 14)	4.8 ± 1.7	0.1 ± 0.3	0 ± 0	0 ± 0	0 ± 0	0 ± 0	2.5 ± 5.5	21.5 ± 0.7

4 DISCUSSION

The way of teaching in universities has changed drastically in recent years and Internet technologies have contributed to this transformation²⁶. This change has been observed by the fact of the Net generation reaching universities. Thus, this study analyzed the use of Facebook to facilitate the teaching of didactics to post-graduate students (master's degree) in a Brazilian public university.

Facebook, as well as other types of social media, presents a series of resources that can be used by teachers to make the contents of the course more interesting and to encourage students to learn. Social media includes all interactions between people, shared online to

convey information through the mainstream media and the simple dissemination of content in the form of words, images, video and audio²⁷. In this context, the results of the present study revealed that there was a good acceptance by the students, who, for the most part (60%), considered Facebook a good resource to complement learning about didactics and pedagogical strategy.

In the present study, the sample consisted of a majority of individuals considered as digital natives (81%). Although all students have had a Facebook profile for more than a year, five students said they had difficulty attending the discussion forum via Facebook. This activity was developed weekly by the teacher. An important

fact was that of the total of five students, only 1 (20%) belonged to the “internet generation”. This may have contributed to this difficulty in using or participating in the discussions. Facebook has the potential to promote collaborative and cooperative learning. However, for the teacher to take full advantage of the social dimension of Facebook, it is necessary to understand how students interact with this technology. And finally, and more importantly, we must never forget that ICTs should only be used if they are appropriate to support the objectives and outcomes of the course²⁶. However, to help the teacher to use this type of technology for the student's learning, it is fundamental to plan the activities to be developed with students at a distance. It seemed that the content proposed and the deadline determined to comply with Facebook activities for this subject were adequate since most of the students (95%) answered in the questionnaire that they were satisfied.

More than 260 million people in Latin America, 42% of the total population, will access social networks regularly by the end of the year. Brazil is the country with the most users on the continent, with a total of 93.2 million by the end of the year. According to a survey by the eMarketer agency, 86.5% of users will use smartphones to connect to networks¹³. Access to social media can be done using various resources, such as smartphones, personal computers, tablets and public computers. The present study revealed that most students accessed the internet to participate in the activities proposed by the discipline via Facebook using their personal computer, followed by the smartphone. To our surprise, none of the students made use of the computers provided by the Institution itself. It seems that students have access to the internet at home and take advantage of the structure and comfort of the

home to carry out academic activities. In addition, for some authors, smartphones seem to be a great resource for proposing active learning techniques and for meeting users' educational needs²⁸.

In the year 2017, it was estimated that 71 percent of internet users were also users of social networks. By 2016, more than 81% of the US population had a social media profile. Starting in the second quarter of 2016, US users spent more than 215 minutes a week on smartphone social networks, 61 minutes a week for personal computers and 47 minutes a week on social networks using tablets²⁹. Smartphones and tablets are devices that are easier for students to carry. In addition, they have several advantages in educational settings, allowing the user to take notes, look for information, communicate with others, and use specific applications for learning skills³⁰. Despite all these advantages, our students seem to use more personal computers to carry out their academic activities.

The results showed that the majority of the students fulfilled the obligatory activities for the conclusion of the course and in the time established by the teacher. An interesting fact was observed in this study when the students were questioned at what time they performed the activities proposed by the teacher through Facebook. Seventy-three percent replied that they completed these activities a few hours before the deadline, and only one student replied that they used to respond immediately to the teacher. This result was surprising since most of the students were considered the internet generation. So, the students were expected to finalize their activities soon. This contradicts Jones *et al.* (2010)² who described the internet generation as impatient individuals with linear thinking who require quick access and the ability to perform multitasking.

The planning of activities of the subject at

a distance was carried out in such a way that the students had weekly activities that were well diversified, such as the creation of classes, documents and also the analysis of cartoons, videos, articles, books chapters and texts. As future teachers, master's students also need to reflect on their role as future teachers. According to Sandars and Morrison (2007)¹, educators need to reflect precisely on their role in a situation where the student will depend less on the educator as an information provider and more on the educator as a facilitator of learning. As individuals belonging to the Net generation, they expect to be involved by the cybernetic medium, with participatory activities rich in sensory experiences (physical or virtual) and opportunities for entry. Therefore, this type of individual ends up being more oriented to the visual media than the previous generations. They prefer to learn what to do instead of counting or reading. They prefer to discover rather than be informed³¹.

Facebook has recently updated yet another network interaction feature. Now users can, in addition to enjoying themselves, opt for the other reactions in comments: "love", "haha", "wow" and "grrrr". Based on these new feedback responses, students were evaluated for posts made by the teacher and their classmates. The results revealed that some students enjoy what is posted by the teacher, but did not express that they loved, smiled, and were surprised or angry. That way, the question remains ... did the students like just to please the teacher? Are students still afraid to criticize or go against what the teacher has exposed or posted? On the other hand, a change of behavior was observed when the photos in which the students themselves or their friends or boyfriends appear in these images. In these situations, they seem more courageous in exposing their feelings or making comments. This finding was very evident when

the photos obtained during the accomplishment of practical activities were posted.

The present study also demonstrated that students react as "likes", even without having seen in full what was posted. In this way, was the student's reaction only to please the person responsible for the post? Students remain uninitiated to participate spontaneously on Facebook because only two spontaneous posts were made by students. These postings provided information related to the contents that were previously studied and that would serve to improve it. In addition, some students also spontaneously posted lesson plans that were built by them as part of a mandatory activity. However, what was observed was most of the classmates liked not to access these posts and others reacted as "like" even though they did not visualize them. In this way, it seems that only the posts made by the teacher are valuable. On the other hand, what is posted by a classmate on the social network does not seem to have value for learning the subject. All these findings regarding students' reactions to the postings made during the course reinforce the hypothesis of Nadkarni and Hofmann²³. According to these authors, Facebook can also contribute to a high level of extroversion and low self-esteem.

One positive feature of Facebook's use as a pedagogical tool to help teachers is that this social network is very popular among students and that many educational institutions offer free internet access. According to Sood (2015)¹⁷, one of the advantages of using social networks in education (such as Facebook) is that students are familiar with Facebook before entering university. For this reason, it seems logical to use the power of this tool. This seems to contribute to help communication between teachers and students and between the students themselves. This situation was also evidenced in the present study since the postings of notices or the

dissemination of scientific events important for the formation of the students were visualized quickly by almost all the students. Several authors have confirmed this improvement in the communication between teachers and the teaching community in the various areas of knowledge through the inclusion of social networks in education^{7,8-11,18-20}.

Posting comments in the Facebook group was only used by students when they were required to participate in the discussion forums (mandatory activity). This shows that this new generation seems to be afraid to expose itself even though it is supported by the internet, which allows the user to express their opinion in a non-contact manner at any time. Thus, educators should encourage active discussions on the social networking platform and have a student training session on the proper use of these sites so that students can have a better working life in the future¹⁹.

The social nature of Facebook is driving its adoption and use among college students. According to Lander *et al.* (2017)³¹, important practical implications of the use of social networks in the educational environment need to be emphasized. As teachers, our challenge would be to take advantage of Facebook's social dimension to enhance our students' learning experience by increasing communication, collaboration, and participation in the learning process. The Internet and social media platforms provide all healthcare professionals with the means to educate patients, collaborate with colleagues, and promote their practices and areas of interest.

Some authors have already demonstrated that the tools available through Facebook and instant messaging platforms (like WhatsApp) are useful to assist in the theoretical teaching of dental practice^{14,32}. In addition, Facebook can contribute to the promotion of collaborative and

cooperative learning^{26,33}. The present study demonstrated that Facebook can be used by teachers who teach in postgraduate schools to facilitate the teaching-learning process of their students. However, these teachers need to be aware of the limitations of the students and this social network. Although most incoming students are from the internet generation and are familiar with the internet's resources, it seems they are still reluctant to manifest themselves more appropriately in the classroom and in the virtual environment itself.

5 CONCLUSION

This study has shown that Facebook, despite its limitations, seems to be a good pedagogical resource to be inserted in post-graduate education. In addition, although the students are well acquainted with this social network, they still show little participation in the didactic activities even in the virtual environment of Facebook.

ACKNOWLEDGMENT

The present study was undertaken without external funding. The authors thank to the Centro de Assessoria de Publicação Acadêmica (CAPA) and William Fernandes Lacerda for correcting the writing in the English language.

RESUMO

Uso do Facebook como ferramenta pedagógica para o ensino superior: adesão e reações dos estudantes

O objetivo deste estudo foi analisar a utilização do Facebook como ferramenta pedagógica para o ensino de didática para alunos de graduação em Odontologia. Setenta e dois alunos adultos participaram da pesquisa. Esses alunos participaram de aulas teóricas, desenvolveram atividades práticas no Facebook e avaliaram o curso por meio de um questionário. As tarefas foram analisadas em relação aos seguintes

critérios: tempo para responder às atividades e se elas foram realizadas de forma completa ou incompleta. Além disso, os tipos de postagens e as reações dos alunos às postagens também foram avaliados. Quarenta e três (59,8%) alunos consideraram o Facebook um bom recurso pedagógico. Apenas 5 (22%) alunos responderam que tiveram alguma dificuldade em responder às atividades do curso pelo Facebook. A maioria dos alunos concluiu suas tarefas por meio do Facebook. No entanto, em geral, a maioria dos alunos só cumpriu as tarefas perto do prazo. As principais reações dos alunos foram curtidas e comentários. Apesar de suas limitações, o Facebook parece ser um grande recurso pedagógico a ser inserido na pós-graduação. Além disso, os alunos ainda se mostram pouco participativos mesmo estando no ambiente virtual do Facebook.

Descritores: Ensino. Materiais de Ensino. Educação Superior. Rede Social.

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