The use of Facebook as a tool to increase the interest of undergraduate students in physiology in an interdisciplinary way

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The process of teaching and learning at the undergraduate level is challenged by an increasing amount of content (1). Now it’s not enough to convey knowledge; it’s also necessary to seek alternative ways to motivate and capture the interest of students both during class and outside of class.

Currently, social networks are popular among students (5) and are used to establish and maintain contacts (6). Facebook, one of the most popularly accessed social networks, has ~500 million registered users (2) and consequently has the potential to become an ally in the teaching and learning process. If properly used, Facebook allows the formation of groups with common interests, enables the exchange of information, and stimulates the search for knowledge. Considering this context in Brazil, where the number of connections grew from 8.8 to 35 million between 2010 and 2011 (3), attracting ~1 trillion monthly visits (4), we asked ourselves: why not partner the physiology teaching with the use of Facebook, to try to increase students’ interest in physiology, using an interdisciplinary approach? Consequently, we created a group on Facebook, which served as a support tool for teaching physiology at the health area undergraduate courses of the Federal University of Pampa (Unipampa) in Rio Grande do Sul, Brazil.

Methods

The proposal of creation of a group on Facebook was thought to act as an auxiliary tool of the undergraduate Human Physiology course in Nursing, Pharmacy, and Physiotherapy majors. This proposal was referred to the Institutional Education Committee for evaluation and was approved (Institutional Review Board no. 10.015.14).

The main objective of the present proposal was to promote student access to content related to physiology outside of the classroom in an interdisciplinary way. For this, the proposal was organizing in the following steps.

Invitation. In the early semester, students in physiology courses were invited to join the group.

Participation in the group. The group was a closed group and consisted of a space to share news, educational/didactic sites, and scientific publications related to physiology arranged in an interactive and easily accessible way. Moreover, this space enabled discussion among students, teachers, and tutors about the topics of the publications. Thus, students were not limited to what was discussed in class, and access to knowledge occurred in the social network in an easy and pleasant way.

After the beginning of the project, at least 2 times/wk, an activity was proposed in the group. After the publication of the content in the group, students were encouraged to 1) comment about the content of the post; 2) discuss the results of the research, as applicable; 3) relate the subject with physiology themes learned in classes; 4) discuss the relationship between physiology and other courses of health undergraduates, in a interdisciplinary way; and 5) interact with the group in any other desirable way. Instructors were responsible for posting the links/pages and mediating the discussions. In Table 1, we show some of the activities and subjects provided in the group.

Evaluation. After a semester of use of the Facebook group, we used an online form powered by Googledocs to verify students’ perceptions about its use in physiology. The questions included on the questionnaire are shown in Table 2.

Results and Discussion

After a semester of use of the Facebook group, we assessed students’ perceptions. Forty-two students (23.4 ± 4.94 yr old) of Nursing (47.63%, n = 20), Pharmacy (7.14%, n = 3), and Physiotherapy (45.23%, n = 19) majors attending the physiology course answered an online questionnaire. We verified that 90.47% (n = 38) of students reported that they accessed Facebook daily, 7.14% (n = 3) weekly, and only 2.39% (n = 1) monthly. Because the vast majority accessed the tool daily, we realized the potential of using it for teaching purposes. When asked if working in the group helped in teaching and learning of physiology, most of the students (80.95%, n = 34) said yes and 19.05% (n = 8) answered “a little.” No student said that the group did not help. Most students reported that they always (17%) or often (55%) accessed the links and news suggested in the group, 26% reported occasionally, and 2% reported rarely. No student said that they never accessed the links suggested.

Figure 1 shows that for 76.19% (n = 32) of students, participation in the group made physiology more interesting. In this question, students could choose more than one option, so, for most of the students, the Facebook’s physiology group served as a motivation to study more physiology, made physiology more fun, improved their understanding of physiology concepts, and/or increased their interest in scientific research. Only one student reported that participation in the group had not changed his perception about physiology.

The creation of the Facebook group was well accepted by the students, contributed to the learning of physiology content, provided a tool to promote the interest, and stimulated the involvement of undergraduate students with physiology outside of the classroom. Moreover, our results demonstrated that this tool can be an important contributor to the processes of teaching and learning, considering the frequency of access of our students to Facebook and links suggested in our group as well as its contribution to a favorable perception of physiology content.

We had previously used other online tools and/or software in physiology (i.e., Moodle) and, although these tools supported...
the teaching-learning process, we did not see the same student participation and motivation that we saw here. Probably this is related to the success of Facebook with young people, specially in Brazil (2, 3, 5). Working in this social network encouraged students to apply knowledge related to physiology and to pursue additional knowledge, as we determined that many of these students investigated additional physiology topics and shared links with their colleagues through the group. Finally, a significant percentage of students increased their interest in scientific research, demonstrating how the sharing of articles and news related to scientific discoveries and publications can contribute to interactions in the scientific community.

It is important also to highlight that often the use of the Facebook group encouraged interdisciplinary connections. This was evident when we observed the associations made by students between contents taught in physiology and in other courses. For example, we posted a link about how the electrocardiogram works (http://www.nlm.nih.gov/health/health-topics/topics/hb/understanding.html) and the relationship between electrocardiogram-recorded graphs and the heart’s electrical activity. In this topic, students made many connections with anatomy and histology of heart and pathologies such as heart attack, ventricular broke, and others. Also, students liked this type of didactic animation a lot because it facilitated their understanding about content.

Considering our results, we recommend the use of social networks as a support tool for classroom teaching. However, it is important to first verify students’ habits in relation to the use of the proposed social network. While Facebook is one of the most used, new social networks appear regularly and habits of use may change. If students are interested, it is important set up the group according the main objective. In our case, we wanted a space to complement classroom activities, so a closed group was a better choice. Also, continuous posts to the page are important. In the contents posted, it is essential verify the provenance and validity of the information before sharing it.

In this project, we also identified strategies that were effective to use in the Facebook group. We discovered that long papers are only occasionally ready in full and that these posts had fewer comments and discussions compared with posts with briefer readings (short reports of magazines, such as the Science Magazine website). So, for these activities, posts with shorter assignments are preferred by students, and sometimes students looked for the original paper after reading the short report. Also, we observed that suggestions of didactic websites were well accepted and praised by students, because they helped them understand course content. One suggestion to those who want to use a Facebook group in physiology is to share this project with professors of other courses, like pathology, pharmacology, histology, and others, whose content overlaps with physiology, because students will often make connections with the contents of these courses. Thus, it is also possible to work more effectively in an interdisciplinary way.

Table 1. *Examples of activities and subjects provided/discussed in the group*

<table>
<thead>
<tr>
<th>Material Type</th>
<th>Aim Scope</th>
<th>Activities Proposed</th>
<th>Other Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>News published in a news website</td>
<td>Sensory physiology</td>
<td>After the availability of a Portuguese news link that discussed the results of a paper, students were asked to read the original paper and discuss the theme (the ability to perceive the presence of diseases by smell)</td>
<td>News of UOL Noticias (Brazilian news website) (<a href="http://noticias.uol.com.br/">http://noticias.uol.com.br/</a>)</td>
</tr>
<tr>
<td>Internet page</td>
<td>General physiology</td>
<td>Suggest online free software that can help study the physiology</td>
<td>Interactive physiology (<a href="http://www.winona.edu/biology/adam_ip/home/index.html">http://www.winona.edu/biology/adam_ip/home/index.html</a>) Brain Facts (<a href="http://www.brainfacts.org/">http://www.brainfacts.org/</a>)</td>
</tr>
<tr>
<td>Internet page</td>
<td>Neurophysiology</td>
<td>Suggest a page of neurophysiology contents</td>
<td>Column of Folha de São Paulo (a Brazilian newspaper) written by a neuroscientist</td>
</tr>
<tr>
<td>Online column of a newspaper</td>
<td>Neurophysiology</td>
<td>Sharing the column text, “Flashings resting brain,” followed by discussion</td>
<td>News of Veja (a Brazilian magazine); the original paper was published in the Journal of Neuroscience</td>
</tr>
<tr>
<td>News published in a national magazine</td>
<td>Memory</td>
<td>Sharing of a news page that discusses how memories can be edited. Students were asked to read the original paper and discuss the theme</td>
<td></td>
</tr>
<tr>
<td>Paper with open access</td>
<td>Glial cells</td>
<td>Read a review paper about the role of glial cells</td>
<td>Review paper published in Estudos Avançados (a Brazilian scientific journal)</td>
</tr>
<tr>
<td>News page from Nature</td>
<td>Drug interaction</td>
<td>Students were asked to read a news article and discuss the interdisciplinarity and relation between physiology and pharmacology contents</td>
<td></td>
</tr>
<tr>
<td>News published in a national scientific magazine</td>
<td>Food regulation</td>
<td>Students were asked to read a Portuguese news article that discussed food regulation and discuss the theme and relationship between the nervous and digestive systems</td>
<td>News from Revista FAPESP (a Brazilian scientific magazine)</td>
</tr>
<tr>
<td>Page of the National Heart, Lung, and Blood Institute</td>
<td>Electrocardiogram</td>
<td>Students were asked to view a link about the heart’s electrical system and electrocardiogram results (<a href="http://www.nlm.nih.gov/health/health-topics/topics/hb/understanding.html">http://www.nlm.nih.gov/health/health-topics/topics/hb/understanding.html</a>)</td>
<td>The heart’s electrical system and Electrocardiogram results (<a href="http://www.nlm.nih.gov/health/health-topics/topics/hb/understanding.html">http://www.nlm.nih.gov/health/health-topics/topics/hb/understanding.html</a>)</td>
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This work also raises several questions for future research. First, how does the use of Facebook in physiology impact student’s learning? This could be measured by comparing the performance (grades) in a physiology course of students that use and students that do not use the Facebook group. Second, does the use of an open group instead a closed group allow people of different areas and levels to collaborate in discussions and posts more effectively? Does the use of an open group promote students interest and participation? These questions could be answer by future research by our and/or other groups.

In conclusion, the use of a social network for interdisciplin- ary students can increase student interest in physiology and facilitate their learning in the classroom as well as increase their interest in scientific research.

Table 2. Questions and possible answers of the online questionnaire

<table>
<thead>
<tr>
<th>Question</th>
<th>Possible Answers</th>
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| 1. Do you think that the creation of the page **Physiology Unipampa** on Facebook helped in the teaching actions of the physiology course? (Choose only one answer.) | • Yes  
• No  
• A little  |
| 2. The posts in the group... (Choose however many options you like.)       | • Physiology became more fun  
• Physiology became more interesting  
• Motivated students to study physiology  
• Improved students’ understanding about physiology  
• Awakened students’ interest in scientific research  
• Did not alter students’ perceptions about physiology  |
| 3. How often did you access the links and pages suggested in the group? (Choose only one answer.) | • Always (100% of links/pages)  
• Often (75–99% of links/pages)  
• Occasionally (40–75% of links/pages)  
• Rarely (1–40% of links/pages)  
• Never (0% of links/pages)  |
| 4. How often did you access Facebook? (Choose only one answer.)             | • Daily  
• Weekly  
• Monthly  
• Rarely  
• Never  |
| 5. What is your undergraduate major? (Choose only one answer.)              | • Nursing  
• Pharmacy  
• Physiotherapy  |
| 6. How old are you?                                                         | Descriptive question                                                             |
| 7. Additional comments                                                      | Descriptive question                                                             |

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AUTHOR CONTRIBUTIONS

REFERENCES


