New technologies in higher education

Perception study among students on the use of WhatsApp and Virtual Learning Environments (Moodle Platform)

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Abstract

The aim of this work was to have students evaluate the use of WhatsApp (WAP) and a Virtual Learning Environment (VLE) at the School of Dentistry, UdelaR (Montevideo - Uruguay).

An observational descriptive study was conducted on students from the 2016 generation. A survey with five items was implemented, including three technological applications (WhatsApp, Moodle Platform and Polimedias), which were rated 0 to 12 points. As for WhatsApp, we asked about the possibility of clarifying doubts, sharing images, getting information, interacting with the teacher and classmates. The average score obtained was 10.77-10.63-10.63-10.63 and 9.20 for each item, respectively. In the VLE, the same items were included except for number two (access to class

presentations), receiving an average score of 8.53-11.27-10.33-9.47 and 5.53. There is a high degree of acceptance of the different technologies, WhatsApp communication being more widely accepted than communication in the Moodle platform.

Keywords: virtual learning environment, WhatsApp, higher education.

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Introduction

Communication and the tools to develop it are essential in education. The challenge in the 21st century, in particular with the advent of new technologies, is to transform them into tools that favor learning opportunities and allow for the right learning conditions and environment.

Education in the 21st century forces us to integrate new technologies as an instrument of practice and a means of democratizing higher education, allowing us to perceive higher education as a public good [(1)].

Information and communication technologies (ICTs) are defined as a "set of technological resources, which, when combined, make it possible to transfer information, and which when associated with the Internet, they make it possible for people to interact with content. According to De Oliveira Junior, this increase in interactivity encourage societies to use ICTs, which in turn modified the teaching-learning process" [(2)]. These allow for the promotion of further transformations that are understood beyond the classroom, and generate, in the words of Honorato, "better reflection and dissemination of knowledge" [(3)]. Cabrera, quoted by Ruano [(4)], describes ICTs as "the set of technological advances developed to manage information and send it from one place to another, where information storage, retrieval and

communication processes are developed, working interactively and interconnected around three basic means: computing, microelectronics and telecommunications".

Pessoa Giasanti Tabarez [5] paraphrases Dewey's 1916 thoughts, stating that "if we teach the students of today as we taught those of yesterday, we will deprive them of tomorrow". The challenge of new technologies shows us that teaching approaches in the 21st century must prepare students to learn how to learn, to be able to solve the problems they face with the greatest clarity possible.

The so-called "e-learning" at the university of the 21st century is considered, according to Fernandez Tilve, "a driver for transformation and strategic element of the socioeconomic fabric" and "e-learning is more necessary than ever before to train highly competent citizens, especially considering that knowledge is an asset as the most important source of growth and productivity" [6]. It incorporates new technologies such as multimedia resources, web access and others, including what is currently known as "mobile learning", which Winters [7] believes focuses on the use of technology. For Chang et al. [8], it is based on three essential components: the device, the communication infrastructure and the learning model. According to Sharples [9], mobile learning incorporates five pillars: physical space, technology, conceptual space, social space and learning dispersed in time.

Mobile telephone services and the use of smartphones are a growing reality in today's society according to Fodevilla Gascón [10] and Ruano [4], who define technological devices as "objects that satisfy virtual and physical needs through technology; they are tangible (hardware) and intangible (software); they can be integrated into the activities of those people who need to store, process, interpret, handle and manage large amounts of information". For Campos et al. [11], "these devices are associated with Virtual Social Networks, which operate as systems that liaise users".

There is different data about the use of technology around the world, for example, Rodriguez Martinez [12] states that in 2000, around 360 million people used the Internet worldwide, and in 2014 this number amounted to approximately 3,035 million people

or 741% more. Similarly, electronic devices have also increased over time.

These devices provide access to a variety of applications, including WhatsApp. The term WhatsApp comes from a play on words and adaptation of the words “What’s up”, a colloquial expression in English, which means “how is it going?”, and “App” an abbreviation for the word “application”. It is a free, multiplatform instant messaging application that allows you to send and receive messages free of charge [13] with mobile data.

Padrón [13] mentions some of the advantages of WhatsApp in the educational field such as avoiding eye contact, free use of messaging services, use of multimedia tools, sending geographical location and no international charges. While Villadiego Cabrera [14] suggests that this allows for or facilitates socialization, teamwork and the importance of sharing; the relevance of digital identity, as well as social participation processes, is that they are an important training factor and favor dissemination at institutional level. Data shows that the use of this application increases student engagement [10], highlighting that “even the most reserved and least participative students in the classroom take part in conversations”.

Ibrahin et al. [15] state that WhatsApp may be “the best help for introverted students”, while others suggest that “the most reserved and least participative students in the classroom take an active part in virtual conversations” [16].

Vilches Vilela states that these elements “emerge as tools that strengthen and facilitate the teaching-learning processes, and they also help develop the capacity to work in groups in a collaborative and/or cooperative way manner” [17]. “Mobile learning” enables student training outside the classroom. Barhoumi states that this allows students to “find solutions to the difficulties they may face during their learning process and it facilitates problem solving, and that through mobile learning it is easy to build and share knowledge” [18].

Using similar technological support but with different purposes and aiming at complementary educational strategies we find Virtual Learning Environments (VLEs), which are conceived to generate a "learning/teaching process or activity that is developed outside a physical space, time and through the Internet, and they offer different means and resources to support teaching; they are currently the technological architecture that provides functional support to the various virtual training initiatives" [19]. Harasim and others already mentioned in 1995 that "networking is a space of rich and satisfying experiences of collaborative learning" [20]. In 2001, when discussing VLE with an institutional view, Garcia [21] stated that "teachers and public and private educational institutions that are committed to flexible, open and distance learning appreciate the possibility of having a wide range of virtual learning environments designed to manage and develop courses and programs. In general, it is not necessary to have specialized computer and Internet knowledge to use these environments, especially if you are using them as a student".

Bustos Sánchez discusses the transforming potential of VLEs by mediating relationships between students and teachers, as well as between students and content [22]. As their uses and recognition by the teacher pose an enormous complexity, these environments are classified and described in a heterogeneous manner (Bustos and Coll) [22].

On the other hand, some authors such as Rossembaun and Wong find some disadvantages and state that "instant messaging services require users to be constantly connected to the Internet, which can lead to a deterioration in mental health, as it can lead to Internet addiction and the appearance of attention deficit hyperactivity disorder in adults" [23].

Based on this, the objective of this study is to learn how a group of first year students of the School of Dentistry of UdelaR feel about the use of WhatsApp (WAP) and a VLE considering several aspects that involve communication and access to information, among others.

Materials and methods

An observational descriptive study was conducted on students from group 4 of the 2016 Histology course of the Dental Surgeon program at the School of Dentistry of UdelaR, who took this class in the first semester of 2017.

An in-person survey was used for data collection, which was completed by the students of the group in private and without providing personal information. Each survey was identified with a folio number. The first segment of the survey referred to the WAP application and another one for the VLE (there was an additional segment not taken into account in this study, which considered the evaluation of Polimedias). In the items referred to VLE and WAP, the following items were evaluated:

- Clarify doubts
- Get information
- Interact with teacher
- Interact with classmates

Items were scored from 0 to 12 points, based on UdelaR's university grading scale. The study was considered observational and did not imply intervention in the opinion of respondents. Therefore, it was reviewed and authorized by the project manager and the head of the Histology Department of the School of Dentistry of UdelaR.

Results

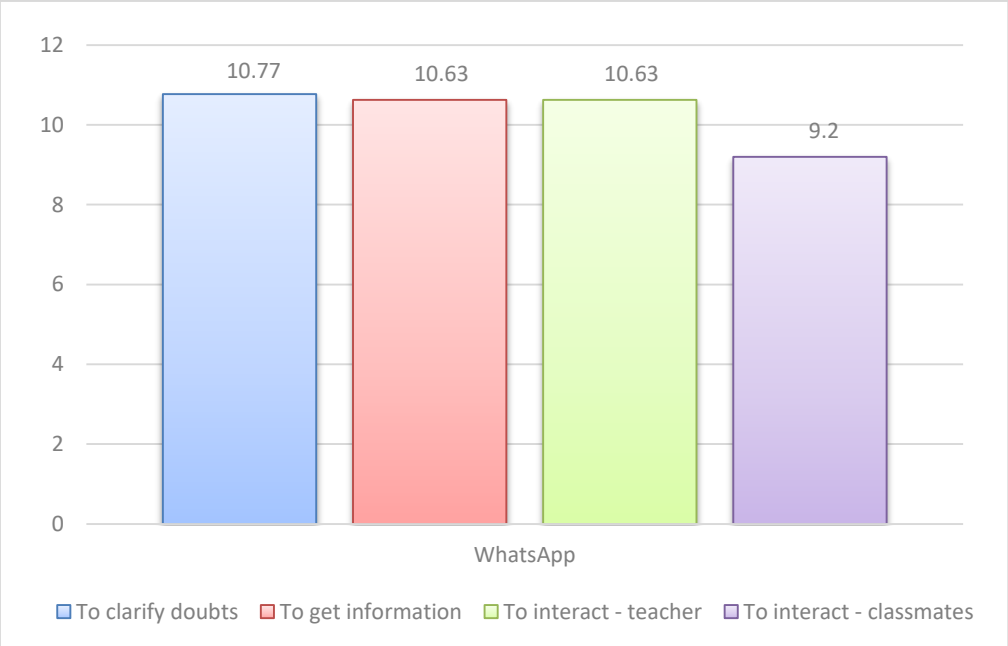
The survey was answered by 30 students. The averages in Table 1 were calculated from these responses.

Table 1 - Average of the scores assigned by students to each WhatsApp and VLE category.

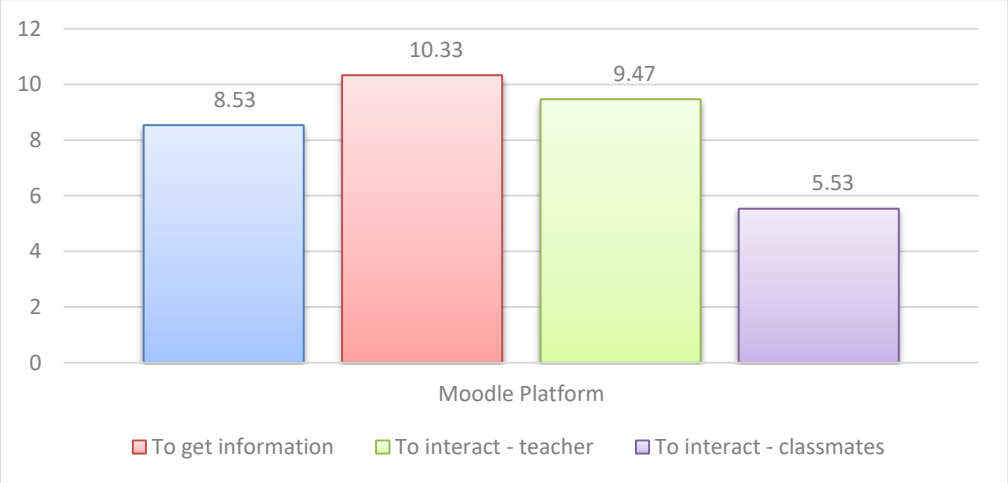
Item	WhatsApp	VLE
To clarify doubts	10.77	8.53

To get information	10.63	10.33
To interact with the teacher	10.63	9.47
To interact with my classmates	9.20	5.53

From this table, we prepared Graphs 1 and 2, where we illustrate the data collected for WAP and VLE from the sample of students that belong to the group.



Graph 1 - Average scores assigned by students to each WhatsApp category



Graph 2 - Average scores assigned by students to each VLE category

When comparing the data collected for WAP and VLE, clear differences in how students perceive both tools appear, where in the category “to clarify doubts” WAP averaged 10.77 and VLE 8.53, we identified that 57 % of the students considered WAP to be superior, while 33 % scored both tools equally and 10 % considered VLE to be a better tool for this purpose.

Regarding information, WAP scored an average of 10.63 and VLE 10.33. A total of 40 % percent of students considered WAP to be a more appropriate tool for this item, while 27 % chose VLE, and 33 % awarded both instruments the same score.

Regarding communication with the teacher, WAP scored an average of 10.63, while VLE scored an average of 9.47. A total of 43 % of students thought WAP was better and 40 % thought VLEs were better while 17 % of the students rated them with the same score.

Communication among students is a special item, as it is the lowest scoring item within the parameters evaluated: 9.2 for WAP and 5.53 for VLEs. In this sense, 70 % of students rated WAP as being better and 30 % rated them equally, and there were no students who rated VLEs as being better in this item surveyed.

Discussion

Several authors agree that virtual learning environments and new technologies are positioned in the 21st century as instruments for development and that they can enhance teaching and learning processes in higher education [1-2,4,6].

By asking students to consider virtual learning environments through the assessment of the Moodle platform used in the first year Histology course of the Dental Surgeon program at the School of Dentistry of UdelaR, we were able to verify that it ranked highly when considering the possibility of clarifying doubts just as Vidal Ledo et al. [20] stated. There is agreement in the fact that it makes it possible to provide further support to the teaching outside the classroom, allowing students to communicate with

their teachers once they have been able to reflect on the contents so as to optimize learning.

As far as interaction is concerned, our work concurs with Bustos Sanchez's view of VLE as instruments that facilitate the exchange between professors and students [22]. However, this exchange changes when we analyze the student-teacher interaction and the student-student interaction. In this case, our results concur with those expressed by Fernández Pascual M.D. et al. [24], who propose a more positive perception of VLEs as a communication tool between students and teachers rather than among students. In our case, while the average scores expressed by students in the communication between students and teachers was 9.47/12, the interaction among students scored 5.53/12.

Students awarded WhatsApp a higher score than VLE. This is most likely linked to the time factor involved in the communication, as WhatsApp is an instantaneous means of communication and favors fast interaction [13]. Regarding the items surveyed, we can observe that interaction with teachers is highly ranked by students, which agrees with what other authors have expressed, who associate it with group work [18] or with the clarification of specific doubts [19].

Unlike what happens in the VLE, among the group of students surveyed we observed that this is in fact a means of communication that is used among students where WhatsApp is awarded a 9.2/12 score and VLE a 5.53/12 score on average. This characteristic concurs with what was stated by Villadiego Cabrera [14].

Conclusion

The survey conducted allows us to observe that the students surveyed rated both technological resources available in the Biological Bases Histology course of the School of Dentistry of UdelaR very highly. Students show a high degree of acceptance

of the different technologies. Data shows a greater degree of acceptance in terms of WhatsApp communication as opposed to the Moodle platform, and this is more evident in communication among students.

Our findings show that 21st century education demands the incorporation of new technologies as inescapable tools in the teaching and learning process, challenging teachers to incorporate them gradually and consciously into their educational practices.

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