

Technological profile of nursing students: an essential requirement for this new era

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Abstract

With this study the students of nursing are empowered to establishment the necessary understanding of the skills used in technology; helping them develop a roadmap for the effective integration of technology in the classroom. The article summarizes the findings about the means of access to information and communication technologies (ICTs) and their use for academic purposes performed by the students of the Nursing Department at the University of Puerto Rico at Humacao. The study identifies the perception that students have of the professors and the uses that they give to technology in their courses. Methodology: Cross-sectional study, a digital questionnaire was administered to students admitted to the nursing program. Three dimensions were defined: access to services, perception of teachers to new media and information skills of students. These dimensions were set according to the literature review and indicators of the accrediting agency. Results: The findings show that students have access to mobile devices, which represent their main method of connecting to the Internet and social networks; as well as the beneficial use of these devices in the classroom. Discussion: The results establish a profile of the relationship of students with ICT and contributes to the decision-making process that allows continuing efforts to effectively integrate ICT curriculum level in the classroom.

Keywords: technologies, students, information skills, mobile devices, digital environments

1. Introduction

The absence of knowledge in the type of access used, information and communication technology is an underlining factor that affects the development of information competency. The technological profile of students who pursuit a Bachelor's degree in Nursing at the University of Puerto Rico at Humacao becomes an essential element in the development of student competency. Not having a technological profile of the student poses a problem, hence working with a curriculum review, tempering it to the program and its demands is marked by the digitalization process. In addition, the requirements of professional accreditation are addressed, and the relevance that the curriculum must have to optimize the academic quality of students and future graduates is being considered. This will provide an effective integration and optimize the needed requirements of the use of technology in the workplace.

The National League of Nursing (NLN) is called to prepare the next generation of nurses to work in a technology-rich environment. The NLN (2008) stated that students in nursing programs need to develop the skills of information technology to work efficiently in an environment that increasingly relies on the use of technology to promote safety in the health care of patients.

As pointed out by the NLN, the movement of consumers who need to interact with health professionals through electronic records and various forms of electronic communication has increased. In addition, the Federal Law on electronic health record (EHR) will change dramatically as nursing is being practiced today. Computer technology is an important competency for the 21st century, where knowledge and skills are necessary to practice in a complex emerging environment characterized by: globalization, technologically sophisticated environment and consumer-centered (Warren & Connors, 2007, p.58., as cited in position statement of the NLN).

According to the NLN (2008) it is imperative that educators distinguish between the use of technology to educate vs. the use of information to manage, document, analyze and report on the practice of nursing. Therefore, the definition provided by the NLN of the Association of College and Research Libraries must be

considered. This defines that the skill of information is the ability to know when and what information is needed and have the ability to access, evaluate and use all forms of information for a specific purpose (paper and electronic). This information competency can be achieved "... in part by the mastery of technology, in part by reliable research methods, but most important, through critical discernment and reasoning."

The study the information and communication technologies, specifically Internet access and use, calls to take a look at the Web 2.0. These tools allow the fostering of educational innovation (Hall & Conboy, 2009). In turn, they are characterized by promoting interactivity (O'Reilly, 2005), to allow the design of interactive experiences in each course.

In short, this time is marked by the emergence and use of simple applications, visually less loaded with static and moving graphics. Facilitating adoption of constructivist learning environments in nature, the user's role has move to an active mode, not as a passive recipient of content, but with the ability to produce it. Thus, although some technologies already exist, there are new uses that are generated through them, which give you the actual meaning of these technologies. The use represents the creation of communicative spaces where the prevailing interest is to share, learn and participate. Against this background, it is necessary to analyze the behavior of the use of information and communication technologies carried out by students.

The partnership between technology and education represents qualitative improvements, given the fact that online learners use new resources and enrich their learning opportunities (Cobo & Pardo, 2007). There are several factors that can affect access to and use of information and communication technologies. In this study, access to services, teacher's attitude to new media and information skills of students will be exclusively analyzed. It should be noted that the attitude the teacher to new media, for purposes of this study, was analyzed in terms of student perception.

Specifically, this study aimed to assess the current state of access and skills in managing information technology and communication in the Bachelor's Degree in the Nursing program. The results will be used to continue establishing strategies that enable effective integration of ICT in teaching and the learning process and thus comply fully with the mission and vision of the program. In addition, train graduates with the high level of competency and performance in the society of information.

As Huston (2013) established, leaders of nursing that start thinking about how emerging technologies will change the practice of nursing and proactively create educational models and development programs necessary to create leadership; to ensure that the nurses have the skills they need to cope with these emerging technologies.

This research is guided by the following question: Which are the means of access to information and communication technologies (ICTs) and their use for academic purposes performed by the students?

1. Method

The study is framed in a cross-sectional quantitative approach. Thus a general knowledge about the object of study was obtained. A digital questionnaire was designed to obtain the data.

Three dimensions were defined: access to services, perception of teachers to new media and information skills of students. These dimensions were set according to the literature review. The data collected were subjected to a descriptive analysis.

2.1 Participant (Subject) Characteristics

Study participants were undergraduate students of the Bachelor's Degree of Nursing Program. This includes freshman students and transfers from others departments. An invitation for participating on the study was sent to all students in the program. Purpose of ethical aspects of the study were also explained.

2.2 Research Design

The period for data collection was six days. As part of the process, participants were given a schedule to attend the computer laboratory and answer the questionnaire. Participation of 151 students, from a total of 205 enrolled in the Nursing Program was obtained, this represents a 74 % of participation.

3. Results

The ages of the participants are divided as follows: 74 participants aged 18 to 20 years, for 49.01 %; 67 participants aged 21 to 23 years, for 44.37 %; 8 participants aged 24 to 26 years, for a 5.30 %; and 2 participants with 27 years or more, to 1.32 % (Figure 1). This is a bachelor's degree program, so that the average age of students is between 18-23 years.

The results related to aspects of Internet access, as well as devices used by participants are presented. Highlighted is the fact that 99.34 % said that if they have a computer at home. Now, as to the type of computer the result was most have access to a laptop computer (Figure 2).

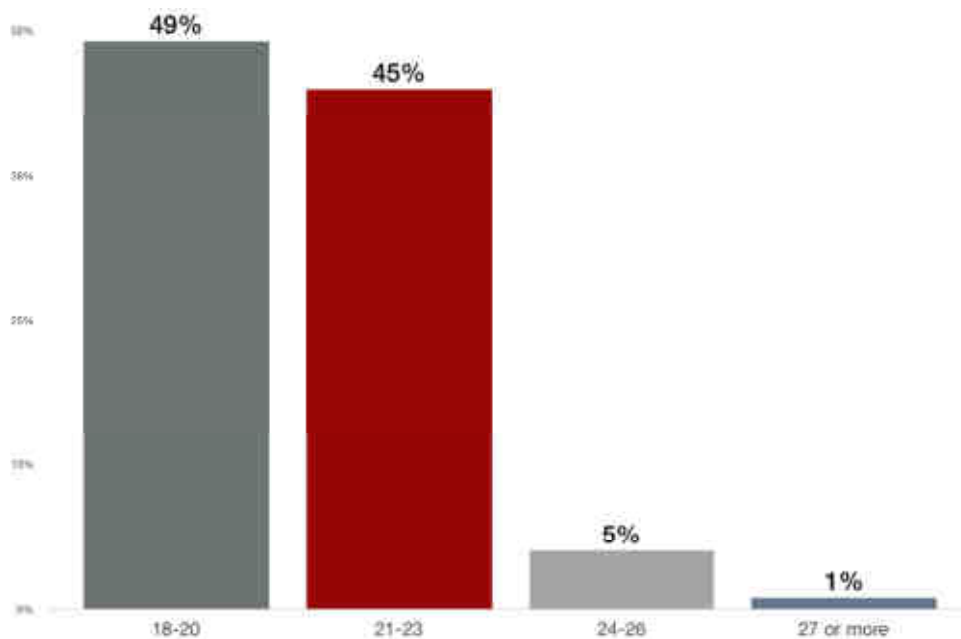


Figure 1. Age of participants

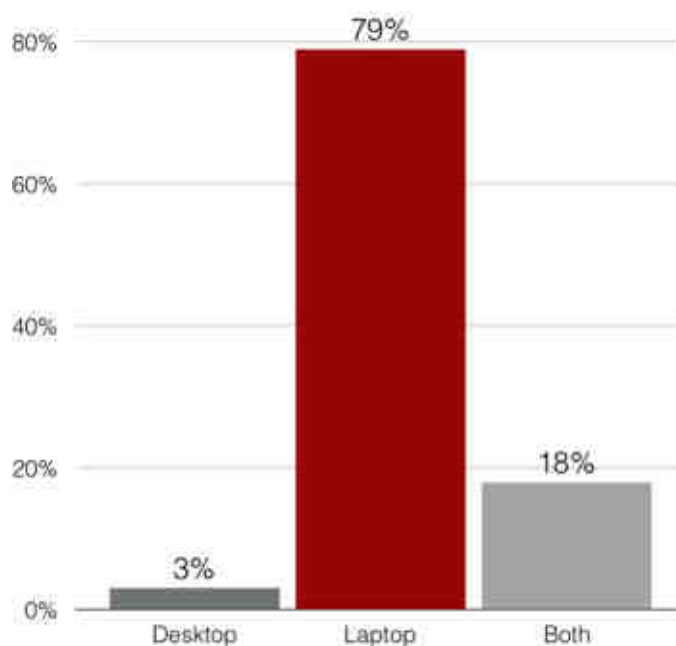


Figure 2. Type of computer.

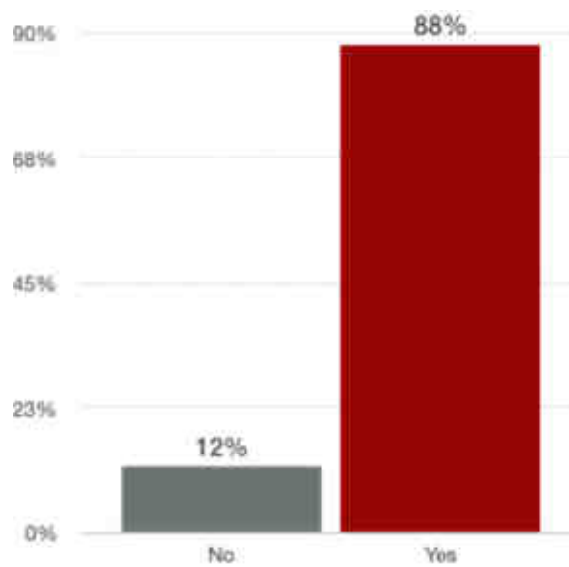


Figure 3. Home Internet Access

Table 1. Access to mobile devices

Mobile Devices	% Participants
Smartphone	49.01 %
Tablet	3.31 %
Smartphone and Tablet	44.37 %
I do not own a mobile device	3.31 %

Table 2. Social network access methods

Mobile Devices	% Participants
Mobile devices	91 %
Non-mobile devices	5 %
I do not own a mobile device	4 %

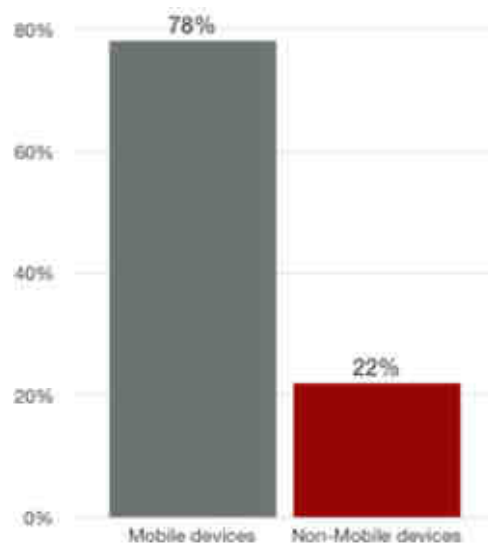


Figure 4. Principal Internet access method

Table 3. Activities that the participants do on the Internet

Activity	% Participants
Social networks	89.40 %
Games	12.58 %
Movies	74.83 %
Search	96.69 %
Email	100.00 %
News and Magazines	54.97 %
Books and Magazines related to Nursing	64.24 %

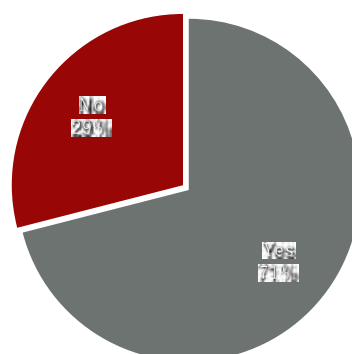


Figure 5. Using collaborative tools in general courses

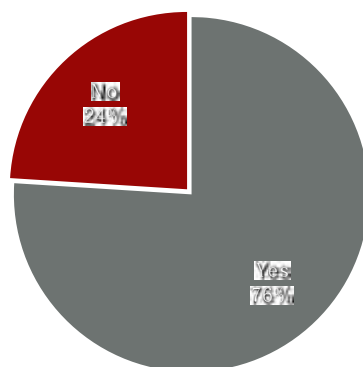


Figure 6. Using collaborative tools in specialization courses

In terms of the perception that the participants have about their teacher's use of technology in the concentration courses, most said they always or almost always make use of different types technologies, 124 (88.96 %) where $n = 145$. When asked the same question, but in general courses, most said they sometimes or almost always make use of technologies in the course, 103 (68.21 %) where $n = 151$.

The results were submitted to a descriptive analysis; in which the SPSS program was used. It was carried out the crossing of variables according to the objectives of the investigation.

4. Discussion

This research presents a detailed report on the access and use of information and communication technologies by students of the Nursing Department program. The findings show that students have access to mobile devices, which represent their main method of connecting to the Internet and social networks.

Highlights the fact that 75.86 % use Web 2.0 tools in their concentration courses and a 70.86 % indicated, also using it in general courses was highlighted. This is consistent with what was found during the literature review, where it was established that online learners use are new resources and opportunities to enrich their learning (Huston, 2013). In terms of perception on the use made by teachers of ICTs an 88.96 % selected almost always provided, reflecting a positive perception of the use of ICT by teachers. While for the general courses the percentage was 52.98 %.

It is important to recognize that most of the students currently enrolled in nursing programs are considered members of the Millennial/NET generation (eg., Individuals born in or after 1980-2000). The challenge for educators is to create nursing educational strategies that appeal to these students and make use of their technological capacities. They must know that their skills should not be limited to the use of social networks, but they can be transferred to the development of the skills of information technology in terms of its use to improve the practice of the nursing profession according to current trends.

Future studies can be performed by cohorts over an extended period, in addition, these studies will expand the sample of participants from others universities with programs that are equivalent to a baccalaureate in nursing. On the other hand, as for limitations, first year student participation tends to be limited, even though they were invited to participate in the study thru email.

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References

- ACEN Accreditation Manual – *Glossary*, September 2015. Retrieve from www.acenursing.net/manuals/Glossary.pdf
- Board of Governors National League for Nursing (2008). Position Statement: *Preparing the next generation of nurse to practice in a technology-rich environment: an informatics agenda*. Retrieve from

- <http://www.nln.org/docs/default-source/professional-development-programs/preparing-the-next-generation-of-nurses.pdf?sfvrsn=6>
- Cobo, C. & Pardo, H. (2007). *Planeta Web 2.0. Inteligencia colectiva o medios fast food*. Grup de Recerca d'Interaccions Digitals, Universitat de Vic. Flacso México. Barcelona/ México DF. Recuperado de <http://www.planetaweb2.net/>
- Hall, R. & Conboy, H. (2009) Scoping the connections between emergent technologies and pedagogies for learner empowerment. *The Higher Education Academy: Transforming Higher Education Through Technology-Enhanced Learning*, 220-234.
- Huston, C., (May 31, 2013). The Impact of Emerging Technology on Nursing Care: Warp Speed Ahead. *OJIN: The Online Journal of Issues in Nursing* Vol. 18, No. 2, Manuscript 1.
- O'Reilly, T. (2005). *What is the Web 2.0? Design Patterns and Business Models for the Next Generation of Software*. Retrieve from <http://www.oreilly.com/pub/a/web2/archive/what-is-web-20.html?page=1>
- Ornes, L.L & Gassert, C. (2007). Computer Competencies in a BSN Program. *Journal of Nursing Education*, 46 (2), 75-78.