

EVALUATION OF AN APPLICATION PROGRAM FOR THE TEACHING OF VITAL SIGNS

AVALIAÇÃO DE APLICATIVO DIGITAL PARA O ENSINO DE SINAIS VITAIS

EVALUACIÓN DE LA APLICACIÓN DIGITAL PARA LA ENSEÑANZA DE LOS SIGNOS VITALES

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ABSTRACT

The objective of this study is to describe the evaluation by the target audience of a mobile application program built for the teaching of vital signs. The steps proposed by Galvis-Panqueva for the construction and validation of technologies were methodologically followed. The user evaluation phase is also described in this study. Twenty-nine undergraduate nursing students participated and answered to an application assessment tool evaluating style, motivation and content characteristics. As a result, most respondents evaluated the application as excellent for the three evaluated characteristics: style (21-25, 72.6%-86.2%); motivation (20-25, 69.0%-86.2%); and content (21-25, 72.4%-86.2%). Regarding adherence to the use of the application, the evaluation allows concluding that students will use it routinely according to their needs, considering that the high scores given to motivation, style and content evidence emotional involvement in believing that the resource may be useful in assisting decision-making. Thus, the application was well evaluated by the nursing students group. In this way, it is expected that this resource will be a viable alternative for the strengthening of the learning process.

Keywords: Nursing; Educational Technology; Vital Signs.

RESUMO

O objetivo deste estudo é descrever a avaliação pelo público-alvo de um aplicativo de celular construído para o ensino dos sinais vitais. Seguiram-se metodologicamente os passos propostos por Galvis-Panqueva para o processo de construção e validação de tecnologias. E neste estudo está descrita a etapa de avaliação pelo usuário. Participaram 29 acadêmicos do curso de graduação de enfermagem, que responderam a um instrumento de avaliação do aplicativo quanto às características de estilo, motivação e conteúdo. Como resultado, é possível destacar que a maior parte avaliou o aplicativo como excelente para as três características avaliadas: estilo (21-25; 72,6%-86,2%); motivação (20-25; 69,0%-86,2%); e conteúdo (21-25; 72,4%-86,2%). No tocante à adesão ao uso do aplicativo, considera-se que a avaliação demonstrada nos resultados permite sugerir que os estudantes o utilizarão de forma rotineira, conforme suas necessidades, haja vista que ao considerar altos os valores de motivação, estilo e conteúdo, estará implícito um envolvimento emocional em acreditar que o recurso poderá ser útil para auxiliar na tomada de decisões. Assim, conclui-se que o aplicativo foi bem avaliado pelo grupo de estudantes de enfermagem. Desse modo, prevê-se que esse recurso será uma alternativa viável para o fortalecimento do processo de aprendizagem.

Palavras-chave: Enfermagem; Tecnologia Educacional; Sinais Vitais.

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RESUMEN

El objetivo de este estudio fue describir cómo el público-objeto evalúa la aplicación móvil construida para la enseñanza de los signos vitales. Para la construcción y evaluación de tecnologías se siguieron las etapas metodológicas propuestas por Galvis-Panqueva. En el presente estudio se describe la etapa de evaluación de los usuarios. Participaron 29 estudiantes del curso de grado en enfermería, que se manifestaron sobre las siguientes características: estilo, motivación y contenido, por medio de una herramienta de evaluación de la aplicación. Se realiza que la mayoría afirmó que la aplicación era excelente para las tres características: estilo (21-25; 72,6%-86,2%); motivación (20-25; 69,0%-86,2%); y contenido (21-25; 72,4%-86,2%). Con respecto a la adhesión a la aplicación, se considera que los resultados de la evaluación sugieren que los estudiantes la utilizarán habitualmente, según la necesidad, teniendo en cuenta que los altos valores de motivación, estilo y contenido indican que los alumnos estarán involucrados emocionalmente al pensar que dicho recurso les podrá ser útil en la toma de decisiones. Por lo tanto, se llega a la conclusión que la aplicación fue bien evaluada por el grupo de estudiantes de enfermería. Se espera que este recurso sea una alternativa viable para el fortalecimiento del proceso de aprendizaje.

Palabras clave: Enfermería; Tecnología Educativa; Signos Vitales.

INTRODUCTION

Methodological teaching and learning strategies in the field of health have undergone deep reformulations, including the insertion of technology inside and outside the classroom with different target audiences and themes. In this context, we highlight information and communication technologies (ICTs), which comprise a set of technological resources developed from a scientific method with the purpose of providing more attractiveness and communication to the training processes.¹

This type of technology has gained space in people's daily lives, directly influencing public policies and leading society to new knowledge about socio-cultural and democratic values, exercising fundamentally the function of educational and informational resource. Thus, the way of interacting today is strongly influenced by ICTs, and it is very important to intensify this type of alternative in the different scenarios of health education, using it for specific purposes and with objectives that are beneficial and highly efficient.²

Regarding the nursing area, there has been an increasing interest in the development and applicability of these resources in the training of new nurses during undergraduate courses in view of the dissemination of educational software in different disciplines, whose focus is on the student or the patients themselves: reproductive and sexual health;³ child health;⁴ and basic fundamentals of nursing.⁵

In this last one, it is convenient to highlight that educational methodologies must be attractive and interactive since the learning of the physical examination techniques of this profession is usually mentioned by the academics as a mixed moment of identification and professional fulfillment, but also of anguish and fear due to ignorance and inexperience.⁶

Among the various techniques that nurses need to learn and develop there is the correct measurement of vital signs, used from primary care to highly complex care. These signs act as indicators for health professionals because the manifestations of change in any of them may be associated with other

physiological changes. Also, the practical applicability thereof is crucial to define the progress of treatments.⁷

These signs are clinical manifestations that help decision making not only for nursing, but also for the entire health team, and currently they are five, namely, body temperature; heart rate; respiratory rate; blood pressure; and pain. The interpretations thereof are based on parameters established by national and international guidelines and their measurement techniques are systematized.⁸

Nursing is the professional category that most performs this procedure, regardless of the institution. Therefore, nurses, nursing technicians and assistants must be proficient in the measurement of vital signs, that is, it is necessary that professionals be trained to make use of the correct measurement techniques and that they have a vast scientific knowledge about this subject in order to evaluate the patient properly and to establish a satisfactory and safe therapeutic planning.

From the undergraduate course, nursing students should be able to verify these clinical evaluation parameters, hence the effectiveness in learning these procedures is of utmost importance, because the malpractice and recklessness related to these activities can lead to several negative results. Therefore, the creation of new technologies for learning the correct verification of vital signs contributes to minimize failures related to this activity.

The scenario provided by the new ICTs offers the pedagogical option of the virtual environment, optimizing the relationship between the teacher and the nursing student, thus enabling a new way of interacting in the daily routine of nursing training. Technological resources bring the decentralization of pedagogical work, in which education ceases to be only the transmission of content and becomes interactive between the student and the teacher, in general.⁹

Mobile applications stand out among these technologies. Dynamic and easy-to-access virtual environments are created through these applications in view of the easiness to obtain devices that support this type of application. In the mobile appli-

cation environment, several opportunities are created for images and texts and even for tests.

In view of the above and of the relevance of ICTs in the current teaching scenario and the importance of correct verification and interpretation of vital signs, this study aims to describe the evaluation by the target audience of a mobile application built for teaching vital signs.

METHODOLOGY

This is a methodological research,¹⁰ in which an ICT was developed in the form of a mobile application with the purpose of assisting the teaching-learning process of vital signs. This research focuses on the stage of validating appearance and content according to the target audience.

The application was developed based on the methodology of Galvis-Panqueva,¹¹ which was chosen because of its consistency with the purposes and objectives of the research. The construction of the application was divided into three stages: analysis and design, development and evaluation. The first two phases were performed according to the criteria proposed in this theoretical framework and, in the end, culminated in the creation of the Vital Easy application, which covers all vital signs (propaedeutics, nomenclature, reference values) and a question bank for testing the level of learning. It is available to be installed free of charge on mobile phone devices that have Android system.^{5,12}

Regarding the evaluation stage, it is suggested that the technology be submitted to the validation process by specialists and by the final user.¹¹ The first validation was conducted with specialists in the area of nursing and information technology, in which the content validity index (CVI) obtained was 0.9 and 0.8 for the judges of the respective areas.⁵ After the validation of specialists and suggestions for changes, maintenance and updating of the virtual learning environment was carried out until the final version for use.

The second stage of validation, which is the focus of this study, was applied to the target audience, namely students of the undergraduate nursing course. The students were randomly and conveniently selected according to the inclusion criteria: being attending the discipline Symptomology and physical examination techniques of a private institution of higher education in Fortaleza-CE and having a mobile device operating with an Android system. The data were collected in the period from March to April of 2016. Throughout the research there were no sample losses.

The research was applied among those students who were present in the classroom at the time of data collection. The data collection was divided in two moments. At first, those students who were willing to participate in the research were recruited. They were asked to use the application for a week. The following week, the students who initially accepted to par-

ticipate received a structured questionnaire with 13 multiple choice questions, in which the technology was approached in three aspects: motivation, style and content, which evaluates applicability, content and attractiveness.

In order to evaluate the importance of the proposed items, a Likert scale was used, validated by means of pre and post-test. In this case, the items were scored as bad, partially good, good, very good and excellent. An item was considered well-evaluated when the agreement between the respondents was greater than or equal to 70% in the very good or excellent items. The data were organized into tables and analyzed by means of simple descriptive statistics, since this contemplates the general objective of the study.

All ethical aspects of human research in Resolution 466/12¹³ were met since the research was approved by the Ethics Committee of the Federal University of Ceará under opinion no. 938,129.

RESULTS

Participants were 29 students of the second year of the undergraduate nursing course, being 27 women and two men aged from 19 to 32 years (± 3.2), enrolled in the discipline Systematization of care I, (Symptomology and physical examination techniques), in a university center in the city of Fortaleza - CE.

The evaluation carried out by the target public consisted of the finalization of validation of the application, in which users expressed their opinions based on previously defined criteria in order to guarantee the usability of the technological resource in the most global and comprehensive way possible.

As shown in Table 1, the poor and partially good options were not scored in any question, although they were present in the instrument. Regarding motivation, all sub-items were evaluated as excellent by the majority of the students, highlighting that the easiness to download and to use the application were the prominent variables, with 25 (86.2%) opinions each, which demonstrates the suitability of the access and usability of technology.

Style refers to the layout and interactivity between the screens, as well as the graphical presentation of the application. In this respect, the didactic resource was better evaluated in the item easiness to use, 25 (86.2%), that is, the transition between the screens is intuitive and there is no need for sophisticated digital resources to exchange between folders.

As for the content, which evaluates information contained in the application, the percentages of evaluation as excellent were higher than the aid, optimization and improvement of vital signs technique and nomenclature, 25 (86.2%) each. Of the students who participated in this study, 23 (79.3%) stated that the application assists in the preparation for the practical assessments performed throughout the discipline, which characterizes the technological resource as attractive for the researched group.

Table 1 - Numerical and percentage distribution of the evaluation of the application by the students regarding motivation, style and content. Fortaleza, 2016

Variable	Good		Very good		Excellent	
	n	%	n	%	n	%
Motivation						
The application interface is attractive	2	6.9%	6	20.7%	21	72.4%
It is easy to download the application on an Android system phone	–	–	4	13.8%	25	86.2%
In general, the application is easy to use	1	3.5%	3	10.3%	25	86.2%
The application provides help effectively	1	3.5%	8	27.5%	20	69.0%
Style						
The vocabulary used in the application is easy to understand	1	3.5%	5	17.2%	23	79.3%
The application interface is attractive	2	6.9%	6	20.7%	21	72.4%
In general, the application is easy to use	1	3.5%	3	10.3%	25	86.2%
Overall, how do you rate the app?	–	–	7	24.1%	22	75.9%
Content						
The application aids in learning the vital signs parameters	1	3.5%	7	24.1%	21	72.4%
The application optimizes knowledge about vital sign nomenclatures	1	3.5%	3	10.3%	25	86.2%
The application improves understanding of the vital signs measurement techniques	1	3.5%	3	10.3%	25	86.2%
The application helps in preparing for practical assessments	1	3.5%	5	17.2%	23	79.3%

DISCUSSION

Experiences regarding the expansion and use of information and communication technology (ICT) have brought successful results and increased the chances for the growth of nursing as a profession and science. The construction of improvement courses in the health area with technological resources shows a varied way of addressing specific and emerging issues in the qualification of students and professionals.¹⁴

Among the software programs, applications for mobile platforms have shown to be a viable alternative, since their use is extremely common among the young university population given the dynamicity and vocabulary imbricated in these products, which are able, in most cases, to generate learning in a significant manner.¹⁵

Given the results of the present study, it can be seen that the application can aid in the teaching-learning process and fulfills the important role of ICTs to facilitate dynamic learning, even when the student is not in the physical space of the university, but in all the academic scenarios.

It is known that the correct verification of vital signs (VS) directly influences the health-disease process of each client since, according to their results, the professional will adopt different behaviors for each individual. Thus, the learning of VS becomes relevant, since the generalist nurse performs this type of procedure in his/her professional life regardless of the scenario where they are inserted, hence the importance of recognizing and knowing how to perform the technique and reference values.

From the results found, based on the answers of the students involved in the present research, it was noticed that the absorption

of the content provided reaching the students' satisfaction in a way the application has become a valid tool to assist the academic demands inside and outside the university environment.

Regarding adherence to the use of the application, the evaluation allows suggesting that students will use it routinely according to their needs given that the high scores attributed to motivation, style and content evidence emotional involvement in believing that the resource may be useful in assisting in their decision-making or in offering more safety to the final work process,¹⁶ in this case, nursing records on vital signs.

Corroborating the findings of the present study, another study, conducted with nursing students of the Ain Shams University in Egypt, also found favorable results for the use of ICTs. In the subject of Cardiology, the use of ICT revealed statistically significant differences in students' knowledge in the scores obtained after the test, besides positive feedback in the learning promotion.¹⁷

A study carried out in São Paulo with nursing students enrolled in the first semester evaluated the importance of inserting educational technologies to complement the nurses' training. The results highlighted some favorable points, such as the possibility of obtaining information beyond the classroom, more communication between the students and between them and the teacher, and the positive influence of using this resource in professional practice.¹⁸

In a study carried out at the Federal University of Ceará, positive effects were identified for students using hypermedia on peripheral venous puncture as a suitable tool to support face-to-face teaching. The comparison between the stu-

dents before and after the use of hypermedia presented significant differences regarding the scores and the correct answers to the evaluation questions, which is considered a favorable point for knowledge absorption after an educational intervention. At the end of this educational strategy, there were favorable changes in the acquisition and reinforcement of students' knowledge about the subject.¹⁹

In the variables motivation, style and content of the VS application, the majority of the answers presented by the students was excellent, a fact that corroborates other studies that used the ICTs and managed to reach adherence by the target audience, as well as the improvement of the learning, which makes the tool useful in the educational process.

In a study carried out with an information technology group in the nursing work processes, the researchers used the forum as a social space with the objective of developing human relations. This tool allowed the sharing of information, the establishment of links between the participants and the minimization of distance, time and space present in this mode of teaching. The digital tool in the ICT modality and focused on the development of a social space allows the exchange of experiences and information between subjects inserted in different professional and regional realities.^{20,21}

Therefore, the dissemination and disclosure of the use of the VS application become pertinent since this technology has undergone the validation process with specialists in the related areas, as well as with the target audience.

CONCLUSION

The application was well evaluated by the group of nursing students in aspects of style, motivation and content. In this way, it is expected that this resource will be a viable alternative for the strengthening of the learning process.

With the wide dissemination of the application, a greater number of students may have access to this alternative platform of study, so that the repercussion in student safety when performing the techniques is visibly positive and the nursing records regarding the vital signs become more assertive.

As a limitation of this study, we could not validate the efficacy of Vital Easy application when compared to other teaching methods, which opens suggestions for further research and thus to verify the premise that digital technology in application format is possible to be used in the current model of nursing education.

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