DEVELOPMENT OF DIGITAL EDUCATIONAL RESOURCES FOR NURSING EDUCATION

DESENVOLVIMENTO DE RECURSOS EDUCACIONAIS DIGITAIS PARA O ENSINO EM ENFERMAGEM

ABSTRACT

Objective: to develop educational resources using the WebQuest methodology to aid in the teaching and learning process of students and Nursing professionals. Method: this is an applied research for the development of digital educational resources that use the WebQuest methodology. The thematic areas addressed were: child health, adult safety, and health service management. Results: as a result of this research, four online courses that use the WebQuest methodology for their application were obtained. Each thematic axis was analyzed to identify the themes to be addressed. So, the topics were: prevention of childhood obesity, prevention of pressure ulcers, prevention of errors related to medication and standardization of Nursing care. Conclusion: in the evaluation of clarity and pertinence, the courses and contents developed were considered adequate. However, in order for the developed WebQuest to be widely available, there is still a need for further evaluation of its technical quality and usability. Descriptors: Nursing; Nursing Education; Continuing Education; Higher Education; Educational Technology.

RESUMO

Objetivo: desenvolver recursos educacionais utilizando a metodologia WebQuest para auxiliar no processo de ensino e aprendizagem de estudantes e profissionais de Enfermagem. Método: trata-se de uma pesquisa aplicada para o desenvolvimento de recursos educacionais digitais que utilizem a metodologia WebQuest. Os eixos temáticos abordados foram: saúde da criança, segurança do adulto e gerenciamento de serviços de saúde. Resultados: como resultado desta pesquisa, obteve-se quatro cursos online que utilizam a metodologia WebQuest para sua aplicação. Cada eixo temático foi analisado para identificar os temas a serem abordados, assim os temas foram: prevenção de obesidade infantil, prevenção de úlceras por pressão, prevenção de erros relacionados à medicação e sistematização de assistência de Enfermagem. Conclusão: na avaliação de clareza e pertinência os cursos e conteúdos desenvolvidos foram considerados adequados. Entretanto, para que as WebQuest desenvolvidas sejam amplamente disponibilizadas, ainda é necessário que haja mais avaliações quanto à sua qualidade técnica e usabilidade. Descriptores: Enfermagem; Educação em Enfermagem; Educação Continuada; Educação Superior; Tecnologia Educacional.

ORIGINAL ARTICLE

DESENVOLVIMENTO DE RECURSOS EDUCACIONAIS DIGITAIS PARA O ENSINO EM ENFERMAGEM

RESUMEN

Objetivo: desarrollar recursos educativos utilizando la metodología de WebQuest para el proceso de enseñanza de aprendizaje de los estudiantes y profesionales de enfermería. Método: se trata de una investigación aplicada para el desarrollo de recursos educativos digitales que utilizan la metodología de la WebQuest. Los principales temas tratados fueron: salud del niño, seguridad del adulto y gestión de servicios de salud. Resultados: como resultado de esta investigación, se obtuvieron cuatro cursos en línea que utilizaron la metodología WebQuest para su aplicación. Cada eje temático fue analizado para identificar los temas a cubrir. Por lo que, los temas fueron: prevención de la obesidad infantil, prevención de úlceras por presión, prevención de errores relacionados con la medicación y la sistematización de cuidados de enfermería. Conclusión: la evaluación de la claridad y pertinencia de los cursos y contenidos desarrollados fueron considerados adecuados. Sin embargo, para que las WebQuest desarrolladas sean ampliamente disponibles, todavía es necesario haber más evaluaciones sobre su calidad técnica y utilización. Descriptores: Enfermería; Educación en Enfermería; Educación Continua; Educación Superior; Tecnología Educacional.
INTRODUCTION

The growing accumulation of knowledge has boosted education to a fragmented, highly specialized formation and seeking technical efficiency. However, the transformations of a contemporary society have put in perspective the aspects related to professional training, such as the inseparability between theory and practice, the need for an integral vision and a broader conception of care.1

Faced with the gaps in university education, in responding to these social demands, there is an urgent need for changes in the education of health professionals, as well as new ways of working on knowledge. Such a demand gives rise to a growing tendency to seek more innovative teaching methods that allow a critical, reflexive and transformative pedagogical practice, beyond the limits of purely technical training, to effectively achieve the care and apprehension of what one wants to teach.2–3

In order to respond to the constant changes in society, more and more students and nursing professionals are being asked to demonstrate new skills, in addition to those required for daily professional activities. In this sense, professional education can help to promote the development of new nursing practices and the implementation of new resources provided by the technologies.4

Initiatives to use technology for the teaching of students and health professionals are increasingly being incorporated and considered important to dynamize teaching, develop active learning projects and skills of future nurses.5 In addition, these technological resources represent immediate access to content and information available in virtual electronic environments, as well as, student greater autonomy and responsibilities are delegated to the student.1

Thus, in this research, we chose to use the WebQuest methodology, because it is an activity based on guided research practice, developed through a problem or challenge, requiring higher levels of thinking, critical sense, analytical capacity, problem solving, and creativity.6,7 The information for solving this challenge/problem is available on the web and students will analyze and reflect on them, and in consensus, find the solution.8

In this scope, this research proposed to develop educational resources using the WebQuest methodology to assist in the teaching and learning process of students and nursing professionals. The thematic axes chosen to be addressed were: child health, adult safety, and health service management.

METHOD

Applied research for the development of digital educational resources that use the WebQuest methodology. Applied research refers to the elaboration of new products or improvement of existing ones, supplying the need for a place to solve a specific problem, ie, uses the knowledge generated by basic research for the practical application with products, against an existing and known demand.9

Educational resources were developed at two public universities in the interior of the State of São Paulo.

To reach the objectives of this study, some thematic axes were chosen to be addressed: child health, adult safety and health services management. These axes were chosen because they are extremely important for the formation of a Nursing professional and because it is possible to work with students of different stages/years of the Nursing course.

Within each axis, a theme was selected to be worked on educational resources. They are:

♦ Child health: prevention of childhood obesity

There is a growing increase in the prevalence of overweight and obesity in children worldwide, including Brazil.10

According to the World Health Organization (WHO), one in three children aged five to nine years old is overweight.11 In addition, 10% of school-age children around the world, are already overweight.12

The nurse deals with this disease on a daily basis and plays a fundamental role in the prevention, counseling and treatment of childhood obesity.13 In this scope, it is of utmost importance that future Nursing professionals know how to deal with patients at risk and seek to encourage healthy habits for their patients and that this starts from childhood, in order to prevent the disease.

♦ Adult Health: Patient Safety and Pressure Ulcer Prevention

The incidence of Pressure Ulcers (PU), characterized by the damage of skin integrity, is, in many health institutions, considered as indicative of the quality of care provided. Among the damages caused by PU, can be mentioned: the prolongation of hospitalization, the increase in the patient's recovery difficulty and the risk for the development of other complications, as well as greater morbidity and mortality in the hospitalized patients, directly affecting the
family economy and public health expenditures.14

The general condition of the patient and the interventions to be performed are the responsibility of the multidisciplinary health team. However, the prevention of PU is mainly related to the Nursing team.

In this sense, it is understood that it is essential to qualify Nursing students on the theme of prevention of PU.

◆ Adult Health: Patient Safety and Error Prevention in Drug Administration

Medication errors and drug-related adverse events are widely recognized as major threats to patient safety. The procedures that involve medication administration are vulnerable and subject to errors because it is a complex process involving five phases: prescription, verification, preparation/distribution, administration, and monitoring, and the medication error may occur in all of these phases.15

The requirements in the training of Nursing professionals, regarding the administration of medication, are increasing. There is a consensus among researchers and professionals involved with Nursing that knowledge occupies a prominent role among these demands. However, research indicates the existence of knowledge deficits of nurses on issues essential to safe medication administration.16

◆ Management of health services: systematization of nursing care

Nursing managers have the greatest challenge to develop activities in the Nursing team, based on principles and values that are in line with the mission of this category and the institution, achieving good results (CARVALHO, 2002). There are numerous instruments that nurses can use in their practice for care planning, among them, is the Nursing Care Systemization (NCS) and staffing, minimizing the gap between managing and caring.

The NCS is the planning of the actions of Nursing through processes of induction and deduction, analysis and synthesis, in order to reach an effective and efficient assistance. The NCS directs, systematizes care, facilitates the evaluation of care, and provides subsidies to the indicators of costs, income and quality, enabling an improvement of such, in order to receive qualified assistance.17

In order to meet the specific objectives presented, this study was divided into three distinct stages:

Step I: integrative literature review;

Step II: WebQuest development;

Step III: assessment of the clarity and consistency of WebQuest.

◆ Step I: integrative literature review

To achieve the first specific objective of the research, an integrative review was carried out on each of the themes to be worked on in the educational resources. This method makes it possible to summarize the already carried out research and to draw conclusions from a specific theme.19

The model proposed by Ganong20 was used to carry out the surveys. This model involves the following steps:

1. Selection of issues for review;
2. Establishment of criteria for the inclusion of studies and search in the literature;
3. Representation of characteristics of the reviewed studies;
4. Analysis of the studies using a specific instrument;
5. Interpretation of results;
6. Presentation of results and synthesis of knowledge.

◆ Step II: WebQuest development:

To meet the second specific objective, it was necessary to develop educational resources using the WebQuest methodology. For this, Dodge21 divides the WQ into two levels: Short WebQuest and Long WebQuest:

Short WQ: aims, to acquire and integrate knowledge and should be planned for execution in one or three classes. At the end of a short WQ, the student will understand the direction of the information they have had contact with.

Long WQ: aims to broaden and refine knowledge. The student, during this experience, deeply analyzes a body of knowledge, and is able to demonstrate his/her understanding of content by creating a product that can be used by others both on the internet and outside of it. The duration of a long WQ can range from a week to a month.

In this research, we used the short WebQuest model.

The format for the elaboration of a WQ follows a structure of six basic elements:

1. Introduction: by means of a brief text, the theme must be presented in a way that motivates students' interest in the subject.
2. Task: The teacher should work out the task in a way that motivates and challenges students to seek solutions to problems. It is the most important part of a WebQuest, and provides a goal and focus for students and
makes the curriculum intentions of the designer concrete.

(3) Sources of Information: in this topic, the teacher should make information available related to the content of the task, links, data searched in the Network or in books available in the place where the activity will be carried out.

(4) Process: a descriptive roadmap of how the task should be performed, that is, what the steps are for the development of the task. Description of how to organize the researched material. This orientation can be done in the form of challenging questions or by conceptual maps.

(5) Conclusion: a conclusion should be presented in the conclusion of the research, which addresses the knowledge acquired and motivates the continuity of the research to other spaces.

(6) Credits: presents the sources of all materials and documents used in the preparation and construction of WQ.

21 Step III: Assessing the Clarity and Coherence of WebQuest

To reach the third specific objective, an evaluation of the materials developed was carried out to identify if the content is relevant, clear and objective. The initial validation of the content was performed by the researchers involved in this study.

For the analysis of the contents, all the researchers had access to the WebQuest in different moments and environments, in order to identify if there were difficulties or errors regarding the understanding, writing or clarity of the texts and available links. In a second moment, the researchers met to discuss the divergent points of this analysis.

Before the availability of educational resources for students, an evaluation of the quality of the content made available by WebQuest by a panel of nurse judges and a usability assessment with computer specialists is still foreseen.

According to ISO / IEC 9126-1, the definition of usability is the ability of the software product to be understood, learned, operated and attractive to the user when used under specified conditions.

RESULTS AND DISCUSSION

As a result of this research, four online training courses that use the WebQuest methodology were obtained. All the content used for the development of the WQ and recommended support materials for the students were selected from the integrative review carried out in the first stage of this research.

All courses followed the same method and model for their development. Thus, when the student enters an environment that is part of this project, it is possible to recognize it by its appearance from the initial screens.

According to the format recommended by Dodge and followed in this research, the WQ are composed of the following items: introduction; assignment; information sources; process; conclusion; and credits. To begin each course developed in this research, the student must go through the “introduction” that aims, through a brief text, to present the central idea and importance of the subject to be studied (Figure 1).
INTRODUCTION

Currently there is a great increase in the prevalence of excess weight and obesity in children around the world, including Brazil (EBBELING et al. 2002; WANG; LOBSTEIN, 2006).

According to the World Health Organization (WHO), one in three children from five to nine years of age are overweight (WHO, 2010).

The significant increase in child obesity is directly related to changes in lifestyle. The children are more sedentary and present more difficulty in playing in the streets, due to lack of security. Another important change is related to eating habits, since there was an increase in the consumption of canned foods, fast food, carbohydrate, fat and calorie rich foods and reduction in the ingestion of fruits and vegetables (EBBELING et al., 2002; MELLO et al., 2004).

Figure 1. Introduction screen of the Childhood Obesity Prevention course. Ribeirão Preto (SP), Brazil, 2016.

After, contextualizing the student in the topic that will be studied, the “Task” is presented. The content of this section intends to attract and involve the student in solving a problem, which must be feasible and correspond to a context that simulates a certain reality, requiring creativity, critical judgment and cooperation (Figure 2).

TASK

Today we will learn how to classify patients by level of complexity and from this carry out the dimensioning of workers.

- For this it is essential to know the support tools to carry out these tasks.
- You must access and study the support materials.
- At the end, we will practice and test the knowledge acquired.

Figure 2. “Task” section of the Health Services Management course. Ribeirão Preto (SP), Brazil, 2016.

In order for the student to be able to develop the proposed task, support materials are offered that are available online in the section “Sources of information”, such as guidelines and reference sites on the topics covered (Figure 3).

Figure 3. Example of a website recommended in the Pressure Ulcer Prevention course. Ribeirão Preto (SP), Brazil, 2016.
In the "Process" section, the objective is to describe how the task should be performed, step-by-step to allow adequate resolution of the presented problem. Before starting to solve the task itself, the basic assumptions that reflect the educational objectives are presented. The reading directions are accompanied by simple and objective orientations that allow a quick and direct consultation to facilitate the student's work. In the application of a WQ, it is the teacher's role to be a mediator of the experience. Therefore, when planning a WQ it is necessary to take into account the need for the presence of the teacher to guide the work and to verify if the investigative process is being carried out in an appropriate way.

The use of computational technologies, to simulate a real environment and/or problem, enables the accomplishment of more creative processes, providing a more active learning by undergraduate nursing students.23

When using the WebQuest methodology for simulation and training of this type of problem, the WQ helps in the implementation of innovative educational practices, focused on participatory evaluation and constant learning of students, in situations that pretend to solve concrete problems, especially, targeted for the development of skills and abilities.7

In addition, the use of the knowledge available on the internet can be an aid in the teaching and learning process for the development of students' skills and competences.24

Finally, in the Conclusion, section the objective is to summarize the general purpose of the whole dynamics of the education proposal. In this section, the result of the task is presented, and when the student is able to complete it, there are messages congratulating him/her and motivating him/her for his/her effort so far.

In the assessment section, students can, together with teachers and peers, review their actions and rebuild, if necessary, the final product of the task. Evaluation becomes a pedagogical tool to continue, reorient, correct and stimulate self-learning.

In addition to assessing WQ and student learning through questionnaires and discussions, educational games are also available in order to evaluate the content that is learned in a light and constructive way (Figure 4).

![Figure 4. DIGESTOWER available in WebQuest: prevention of childhood obesity. Ribeirão Preto (SP), Brazil, 2016. Source: 25](image-url)

Pereira et al.7 in his work, found that evaluation is more effective in fulfilling its role when it aims to provide opportunities for gradual approximation, according to the inherent specificities of the teaching and learning process. In this scope, the most important quality in an evaluation process refers to the manifestation of the students' personal impressions about the proposal developed, resources made available and the work group.

In this sense, it is worth emphasizing the importance of using the WebQuest methodology for a formative evaluation as a consequence of an innovative educational, participatory project and closely linked to self-learning.7
The last section of the WQ, called “Credits”, is composed of only one screen in each WQ. In this section, all the material used by the authors for the preparation and construction of the WQ is presented. It is important to remember that the “Credits” are not the references indicated for the students and, yes, the necessary material for the formatting of WQ.26

CONCLUSION

This study focused on the development of four digital educational resources for undergraduate nursing students. These educational resources were developed according to the WebQuest methodology and aim to fill identified gaps in Nursing graduations. Three main themes were selected: child health, adult health, and health service management.

The WQ, the product of this research, has as its proposal an education that seeks to integrate theory and practice, from the valuation of knowledge and the simulation of real situations, with a view of stimulating teamwork and critical thinking of undergraduate Nursing students.

It is important to emphasize that the use of new educational technologies is an innovative strategy and characterizes a paradigm shift in the training of students and health professionals. The general objective of this research, “To develop educational resources using the WebQuest methodology to aid in the teaching and learning process of students and nursing professionals” was achieved and promising results can be observed. However, in order for the WQ presented in this study to be widely available, there is still a need for more evaluations regarding the technical quality and usability of these resources.

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