

Development of a sequence of virtual learning on scientific information using an educational platform for hospital medical libraries.

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Introduction: How to use the scientific sources and biomedical information and their critical selection has been called Competences in Health International Literacy for years. The main goal for hospital medical libraries is that users recognize, identify, obtain, organize, understand and use the most appropriate information sources to recover the most important records that they can measure up and brush over in their own clinical practice to finally communicate the results of a research study.

Objectives: The aims of this study is contributing to access and use of scientific information through the development of a sequence of virtual learning at medical libraries using an educational platform to help students to manage and evaluate the bibliographic health information, and use it appropriately.

Methods: We start with a literature's review and update on information literacy and online learning at hospital libraries.

Results: We propose a method to promote a critical and analytical learning, problem solving and be an active involvement of students in their virtual learning.

Discussion: We identify the methodological principles of virtual training, using the most appropriate teaching methods for the subject, facilitate student's access to specialized information sources, and integrate the knowledge information technologies and proposal work strategies to help them to build their own cognitive structure.

Conclusions: Thanks to the Bologna Plan, the degree curricular design is changed and it increased the importance of teaching about health information sources. Furthermore, the Knowledge Information Technologies provide a questionless tool to implement new learning methods and readapt current.

About online learning, the student is on the focus of the educational process. He controls their own timing of learning and he manages their studying time. This kind of learning allowed him to be a self-governed, while it provides him the mechanisms for interaction, communication and cooperation.

The learning activities that use different balanced and complementary learning sources are promoting and improving the learning contents to allow the student's participation and interaction with the librarian-teacher's team. To sum up, not only the cognitive student's capacity is developed but also the emotional, social and collaborative capacities.

Introduction

The past 10th of March in Alicante, at the 19th National Congress of Hospitals and Health Management, a health librarians' team introduced a dissertation about *The Scientific literacy framework program in health libraries at hospitals*. We spoke about the contribution to access and use the scientific information through learning programs and about the education skills which were made by the medical library.

That dissertation started from a couple of reflections emerged in a work-team called *teaching and learning with technology. How we transfer the knowledge?* in the Bibliosalud Congress (XV Congress of Information and Documentation in Health Science that was placed in The Physicians College of Madrid in 2014).

Health Library has compulsory to organize continuous learning activities at hospital, to find a real impact and a specific success in the development of institutional educational goals. That support consists of coordinating and developing a program about competency literacy for grade and postgrade university students and health professionals. Furthermore, it is essential to share those learning programs with several hospital departments: Education Unit, Investigation Unit, Continuous Education Commission and the chiefs of hospital plans and programs.

On the one hand, the library must offer educational activities related to the use of information and learning resources to facilitate the access to them. The objective is to give the students the best support to acquire and apply the main capabilities to evaluate and use the scientific information in any format, besides using communication skills.

On the other hand, the library has to design meetings and seminars to complete all the needs of the hospital units which use the library services and improve knowledge skills, digital capability and information management.

Nowadays, there are three important frameworks that the medical library has to accomplish to contribute the development of the basic literacy competencies at hospital with transversal and multidisciplinary actions:

1. Offer educational courses to university, master and PhD students, medical residences and health professional to acquire knowledge.
2. Create a good environment with the best online and face-to-face learning activities.
3. Organize and lead specific programs with the attached University.

On-line learning platforms have some advantages over face-to-face learning to obtain the final goal about education at the Medical Library. Based on the excellent results in university libraries in e-learning, we have decided to organize a virtual course on scientific information in health libraries¹ as:

- It is an innovative project at hospitals.
- It provides the best learning flexibility.
- It allows a major participants number.
- It gives self-constructive educative itineraries by students.

Objectives

Organize a sequence of virtual learning on scientific information using an educational platform in a framework of education plan at medical library, for grade and postgrade users, whose education start at hospital.

Goal of Library Service and their chiefs is that the students get literacy skills so they can manage information, filter, codify, evaluate, understand and transform them in knowledge to use with efficiency in the diary clinical activity.

Methods

We began searching scientific literature and we found some updates about educational virtual platforms using communication technology. The terms we used were: e-learning, virtual learning environment, learning management system, course management system, managed learning environment, integrated learning system, learning support system, learning platform, etc. Eventually, we selected the best platform to organize our course for medical libraries at hospital.

Results

A virtual sequence of learning is a knowledge-learning process or activity that is developed outside classroom, through the Internet. It offers a lot of resources to support the educational training which are the base of technological architecture to e-learning. The librarian-teacher must be prepared for designing and managing the educational program, conscious that new conditions give her a new pedagogical vision to grow professionally with the use of new technologies².

The goals of the learning sequence that we show are:

1. Identify and use the education methodology principles at university.
2. Facilitate access to health information resources for students.
3. Integrate Knowledge Information Technology in the course.
4. Propose work strategies to construct the own cognitive structure.

Skills to develop in the learning sequence are:

- Analyze cases, situations and processes.
- Learn to synthesize the topics that the librarian has prepared.
- Use information sources, data bases and reviews efficacy and critically.
- Use learning strategies based on the more suitable websites.
- Participate in on-line discussion and forums to think about the topics.
- Make on-line cooperative works to promote transversal competencies.
- Build knowledge through the cases to encourage critical lecture.
- Critical evaluation about topics and problems we have found.
- Self-responsibility of own learning and skills development.

Model to design a sequence of virtual learning:

The success in the achievement of a course depends on the manage and design before teaching³. We must design thinking about users and also about their features and in the case of e-learning, we should adapt topics created by librarian-teachers in the e-learning platform.

In addition, we show a model with the main parts that we must include in the virtual sequence of learning. Moreover, we have designed it taking into account the aspects mention it before.

The model includes basic information of the course (title, librarian-teachers, dates, etc.), the objectives, the student's competencies, syllabus of the course and finally the evaluation.

The syllabus is divided in five topics with their own objective, their schedule and activities. In the same way, we use technological resources as videos, role play, conceptual maps and we use the skills to facilitate online learning as chats, questionnaires and forums to create a dynamic, flexible and a motivating learning.

Table 1

<i>Model of sequence of learning</i>		
<i>Identify the sequence</i>	<i>Problem of context</i>	
Title: Information Sources in Health Sciences Librarian-teachers: health librarians Students: health professionals, health students. Time: Dates: Edition number and year: Continuous education credits:	Understand the process of searching strategies to make clinical decisions, educate and investigate	
<i>Title</i>		
Information Sources in Health Science		
<i>Competencies</i>		
Main competencies: manage bibliographic data bases and resources in health science. Specific competency: help the students to acquire the main skills to manage the results of search, filter, select, evaluate, understand and use them adequately.		
<i>To begin</i>	<i>In order to</i>	<i>How</i>
1. Identify and use the best educational methods for the course. 2. Facilitate the students the access to specialized information resources. 3. Include the IT in the course 4. Propose working strategies for helping students to build their own knowledge structure.	1. Be efficacy making clinical decisions, educating and investigating. 2. Be able to handle themselves with a virtual environment. 3. Learn in a creative way 4. Be critical in the selection of resources. 5. Be able to work in a multidisciplinary team.	1. Educational videos 2. Conceptual maps 3. Platforms based on videogames. 4. Discussions ⁴ 5. Reports

PROGRAM

Opening activity

Based on the principal statement, the sequence of virtual learning is opened with an introduction activity to focus students in the general content of the course:

Topic 1: introduce the most important health science information resources and learn to use the MeSH and Emtree thesauri as the Boolean operators.

Developing activities

The student must investigate the content and the theory to solve a problem or a question through bibliographic searches in specialized data bases.

Topic 2: International data bases: PubMed and EMBASE. Objective: learn and manage the data bases PubMed and EMBASE.

Topic 3: Resources for Medicine Based Evidence: UpToDate, Cochrane Library Plus y Trip Database. Objective: learn how to use UpToDate, Cochrane Library Plus y Trip Database through practical cases.

Topic 4: Bibliometrical analysis of scientific production: Journal Citation Report (JCR) and Scimago & Journal Ranking (SJR). Objective: learn how to manage JCR and SJR.

Topic 5: Bibliographic manager. Objective: learn how to manage it.

Closing activities

We have selected a pair of activities that allow to settle the learnt knowledge and apply them resolving problems or practical situations in different contexts. Objectives: learn the contents of the course.

EVALUATION

Starting questionnaires

Ending questionnaires

Following activities sheet

Evaluation survey

The beginning evaluation determines the background that students must have in order to modify contents and rhythms. We can do a level questionnaire to evaluate the knowledge and facilitate the distribution of teams and the opening activities.

During the course the librarian-teacher evaluates not only the individual work but also the team work. The students receive a feedback about their learning process. At the end of the course the capabilities get by the students are evaluated with a following sheet, homework and one evaluation survey. The librarian-teacher establish a final mark and to conclude, a comment about their learning and the skills acquired by the students⁵.

In our case, we will focus on the educational evaluation in the sequence of learning. This will be compulsory, continuous and evaluated as individual as collective.

Discussion:

We identify the methodological principles of virtual training, using the most appropriate teaching methods for the subject, facilitate student's access to specialized information sources, integrate the knowledge information technologies and finally propose work strategies to help them to build their own cognitive structure.

We choose Moodle for being one of the free software platforms that it is turning into a standard platform among the most important users like the Britain Open University with 24.500 websites used in 175 countries⁶.

Conclusions:

Despite the benefits and the huge usability of these learning skills, we have found some differences about value given the virtual and face-to-face activities, being appreciated these last. However, we are in favour of working with both activities simultaneously (online and face-to-face education) because none of them are exclusive⁷.

In addition, we are aware that information society and new technologies set out a new learning challenge. On-line learning fosters social education but the most important one is the practical education which allows the student to acquire skills related to the search selection filter, evaluation and results management.

To sum up, it can be conclude that the librarian-teacher must incorporate efficacy methods to transform the students learning in a participative and practical experience.

It is beneficial to introduce educative resources with an active role for students and integrate Internet and social networks.

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