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Heart Function Through Educational simulation

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Abstract

Through the process of education and based on specific methods, specific knowledge is acquired, skills and abilities are developed and values are formed. Educators impart their knowledge using techniques that make teaching more interesting, whether it concerns adult or minor students. The purpose of this paper is to present all techniques, results and difficulties used to prepare the training material for interactive educational tools, on adult education. Technology played a significant role in the production of the material. This paper addresses the characteristics of both technology and educational tools that were used. Moreover, the importance of health training is mentioned. Finally, the target group, the means to be used and the training program are presented in detail.

Keywords: *Health training, Health Informatics, Interactive educational tools, educational simulation.*

Introduction

Nowadays, the mainstream in education based on a combination of postgraduate programs but also on continuing training programs, based on a properly designed schedule, using sector specific methods [Alimisis, Zoulias], setting educational objectives. Furthermore, it is a necessity for the health professionals to familiarize and train in the emerging technologies [1]. There are various references in the literature that promotion of vocational training and adult education is closely related to technology [2].

Information and Communication Technology (ICT) tools in healthcare focused has a bifold target, either training patients for prevention measures or for their treatment [3-5]. On the other hand the provision of ICT tools to healthcare professionals aims to improve quality of healthcare [4], [6]. Various types of ICT educational tools have been used, from mobile, tablet-based [5] or web based with interactivity [3], [4], [6]. On all those studies the final results summarises that ICT tools are seriously affect that promotion of trainees related to the proper response to health-related events [4], [6]. Furthermore, studies on Serious games (SGs) developed on pedagogical principles and supporting education and training purposes and utilizing ICT [7].

This work presents the utilisation of Camtasia-2020 and Animaker as ICT tools for the development of training tools used by health professionals (e.g., student nurses, student physicians) in a more interactive way of learning. Furthermore, the above-mentioned tools are proper for the training of general public on introductory issues of the cardiovascular system anatomy.

Methods

Camtasia is a software developed by TechSmith, for creating and recording video tutorials, presentations or direct recording plug-in to Microsoft PowerPoint [1].

Animaker is an online platform for non-professionals designers to create Animation and Live-Action videos. Is a DIY (Do-It-Yourself) video animation software, which helps users creating animated videos using pre-built characters and templates [2].

The literature performed for the support of this work reveals that there are no applications on health training. There is a study which compares Camtasia to Power Point and Media Site. It has concluded that Camtasia is easiest to use (74%), most effective (78%) and most pleasing overall (69%). Moreover, the results showed that the specific tutorial features to be the most effective were: video (33.3%); mouse movements (57.1%); instructor presence (28.6%); audio instruction only (28.6%); and interaction, meaning having to click to advance in the tutorial, (28.6%) [8].

Researchers of this study designed texts and images, the predefined the scenarios of the final resulted educational

[1]https://www.techsmith.com/camtasia-education.html

[2]https://www.animaker.com/features

material the tools that were used for the education's development were Camtasia-2020 and Animaker.

Camtasia-2020 was used for the creation of interactive educational tools, for the subjects "Introduction into the Cardiovascular System" and "Heart Anatomy". The material was enriched with transitions for each image, tools like "Zoom and Pan", Callouts, Visual Properties, sounds and recorded narrative, bringing the desirable results.

Animaker was used for the subject "Blood Circulation", using its abilities, such as animation, images, sounds and recordings and various effects [3].

A major advantage of the study is that all training material produced by a registered nurse, with high willing of learning ICT tools and use them but with no previous experience in informatics and design.

The evaluation of the videos was not systematic, and it was limited to a focus group of 5 health experts' trainers, health expert trainees. The focus group evaluated the educational tools and material, making a small unstructured report. However, answers were not recorded systematically.

Results

For the teaching needs of the educational program, three audio-visual scenarios were created; "Introduction into the Cardiovascular System", "Heart Anatomy" and "Blood Circulation". The first and the second one was created using Camtasia-2020.

Figure 1: Introduction into the Cardiovascular System.

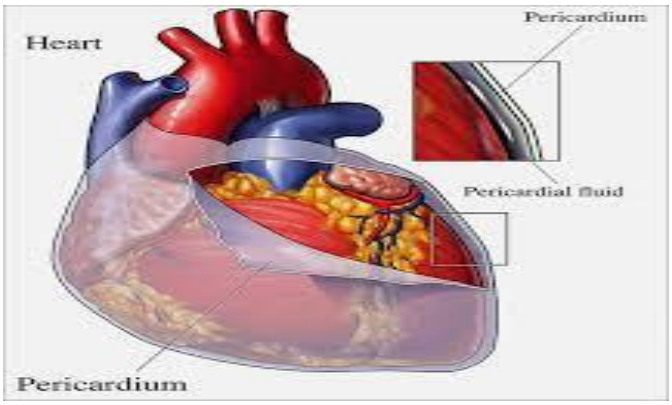

Figure 2: Heart anatomy.

Figure 3: Blood circulation.

Discussion

The main objectives of this study is to interactively train healthcare professionals and students in order to improve higher healthcare quality services [4], [6]. In addition to that helping general population to clearly and transparently understand all views of cardiovascular system functionality and even promote their involvement on their treatment [3]–[5]. In literature studies focus on healthcare students present cardiovascular healthcare cases [9]. This work approaches the training needs producing interactive, animated, and multilingual material. During the development of the training material the researchers encounter difficulties that are mainly on the design and the development, which teaches the "Introduction into the Cardiovascular System", "Heart Anatomy" and "Blood Circulation". In addition to that the provision of simple, suitable concise, understandable training tools, providing all the necessary information of heart anatomy.

Conclusions

In this study, interactive training material produced presenting the heart anatomy, fulfilling training needs of healthcare professionals and general population. Three training materials were produced using Camtasia 2020 and Animaker. The tools characterised of their interactivity and animation features. Introducing ICT interactive tools in healthcare issues training provides an alternative training methodology which motivates trainees and further enriches the learning experience. The use of Camtasia 2020 and Animaker for the production of the above-mentioned training material performed with no programming skills. Furthermore, the learning curve of the tools was low. In the era of COVID19, this type of material is suitable for continuing the training of healthcare professional and general public, further promoting distance training, self-pace learning, overcome lockdowns restrictions and continuing actions of prevention and treatment [4].

Future work of this study could be a broaden planned evaluation of the tools, using a systematic, well-structured evaluation approach. Moreover, to enhance or further develop training tools and material properly designed for disabled people learning needs. Another idea is to combine ICT with the sense of touch of real tissues of the body, using a heart and its parts as a prototype and connecting them to

[3]https://www.animaker.com/

[4]https://www.iatronet.gr/ygeia/paidiatriki/article/25755/ekpaidefsi-apo-to-spiti-i-prwti-mathisiaki-wthisi-sto-paidi.html

special technological networks, which will display educational messages, depending on the energy they will receive.

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