

E-Learning Content for Early Detection Cervical Cancer

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Abstract

Cervical cancer is the second most commonly type of cancer that strikes women. The rate of deaths caused by this type of cancer is quite high. The mortality rate caused by this cancer can be reduced through early detection program. To support this program, the Ministry of Health of the Republic of Indonesia is aware of the need for training the health workers in order to do the socialization quickly and evenly to all corners of Indonesia in order to reduce the number of cases of death due to cervical cancer. The aim of this research was to find out the type of online learning content that was suitable and easy for the public and medical personnel to understand on early detection of cervical cancer. The method used British Columbia's standard for online learning content which mainly focused on four criteria. Moreover, the method that was used by Jeong and Kim to design the content of an instructional approach was also employed. Bloom's taxonomy theory was followed as the reference theory in designing the online learning material. The result described the information content of the early detection of cervical cancer in form of multimedia in online learning.

Keywords: Distance Learning; Cervical Cancer; Cancer Prevention; Learning Content

Introduction

Cancer has long been come into the attention of science and healthcare practices, even though it is not a contagious disease. Among many known types of cancer, one of the deadliest is the cervical cancer. It was also the second most general cancer cases occurring to women worldwide. Based on the statistics acquired by Parkin, the number of cervical cancer cases per year ranked first in the region of Asia [1]. Therefore, the World Health Organization (WHO) has issued a resolution to prioritize the development of programs in controlling cancer disease, which must be executed according to the socio-economic conditions in respective countries [2].

Nowadays, the conduct of teaching and learning has more creative, effective, and efficient alternatives due to the highly developing information technologies available around us. One of the alternative mean is the use of e-learning or generally known as online learning. Online learning is defined as the process of teaching and learning either partially or fully, being done through Internet services. That does not include other means like television or radio broadcasts, videoconference, videotapes or educational software that do not have a significant Internet-based instructional component [3]. This online learning method was used to inform and educate people about the early

detection of cervical cancer, and was introduced to the public, health practitioners, midwives, and other medical personnel.

The research topic was derived from the lack of awareness about cervical cancer and its early detection in Indonesia. The ongoing campaign and socialization seemed to be inadequate hence the need of more effective, efficient, and up to date methods to educate and inform the public through the online learning approach. However, the online learning system must be conducted with proper content design and user friendliness in order to fully and properly deliver the learning material.

Method

The sample population of this research was the cadre and medical personnel residing in Jakarta, the capital of Indonesia. The selection of Jakarta's population was based on the Human Development Index (HDI) which is a measurement index of life expectancy, literacy, education, and standards of living for all countries around the world. Based on statistical data up to the year 2010, the HDI in Jakarta was on the top of the list, namely amounting to 77.6%. The samples consisted of public health clinics that has been providing early detection program to Jakarta residents. These clinics were scattered into five areas in greater Jakarta; those were eight clinics located in West Jakarta, one clinic in Central Jakarta, one in South Jakarta, one in East Jakarta, and one in North Jakarta.

The method of instructional approach that was employed by Jeong & Kim [4] to design the learning content was used in this research. Bloom's taxonomy theory was used as the reference theory in designing the online learning material [14]. Moreover, concepts in using images and videos in e-learning were utilized [18, 19, 20]. Questionnaires were distributed to the target users of this online learning system, ranging from people in general to medical practitioners. Thirty-five questionnaires were distributed to people from the public clinics scattered through out greater Jakarta and fifteen medical personnel in the Dharmais Cancer Hospital. The questionnaires were consisted of questions in Likert Scale answers. The questionnaires were compiled based on four criteria in accordance to the standard for online learning content that was used by British Columbia Ministry of Education, which mainly focused on technical standards, layout (visual design) standard, instructional design, and pedagogy standards and assessment standards [5]. Additionally, some images content in the prototype were extracted from several sources [6, 7, 8, 9, 10, 11, 12, 15, 16, 17].

Results

Figure 1 is a screen display from the main page or the homepage of online learning content for early detection of cervical cancer. On this page, user can access some feature of learning such as syllabus, learning material, online quiz, gallery, video and discussion forum. White and blue color as the base background color designed by following the standard for online learning content that is also used by British Columbia Ministry of Education, which is a neat format including white space, effective use of color and the color of the text that can be read clearly on the background color.

Figure 2 shows the screen display of the syllabus, where users will be able to see the overall content of the sub chapters from each learning topics. This section was designed for the purpose of inducing curiosity and motivating users to browse through the subject of the study before the study begins. The syllabus menu also provides through course description and expected learning outcomes. Course description was designed with the aim for user to be able to know the focus of the objectives from this learning. Course description was used as a guide in designing learning outcomes.

The learning outcomes aim is to describe the expected outcome from the learning process. Additionally, the learning outcomes could also provide benefits for teachers/educators to plan their lessons and help to focus more on outcomes, goals and specific instructional. In this research, the learning outcomes were accordingly designed and adapted from Bloom's taxonomy theory of learning. The comprehensive nature of the learning theory and design hierarchy in a nutshell can

illustrate the result of learning. Bloom's taxonomy theory that has been used consists of six levels such as knowledge, comprehension, application, analysis, synthesis and evaluation.



Figure 1. Homepage Display

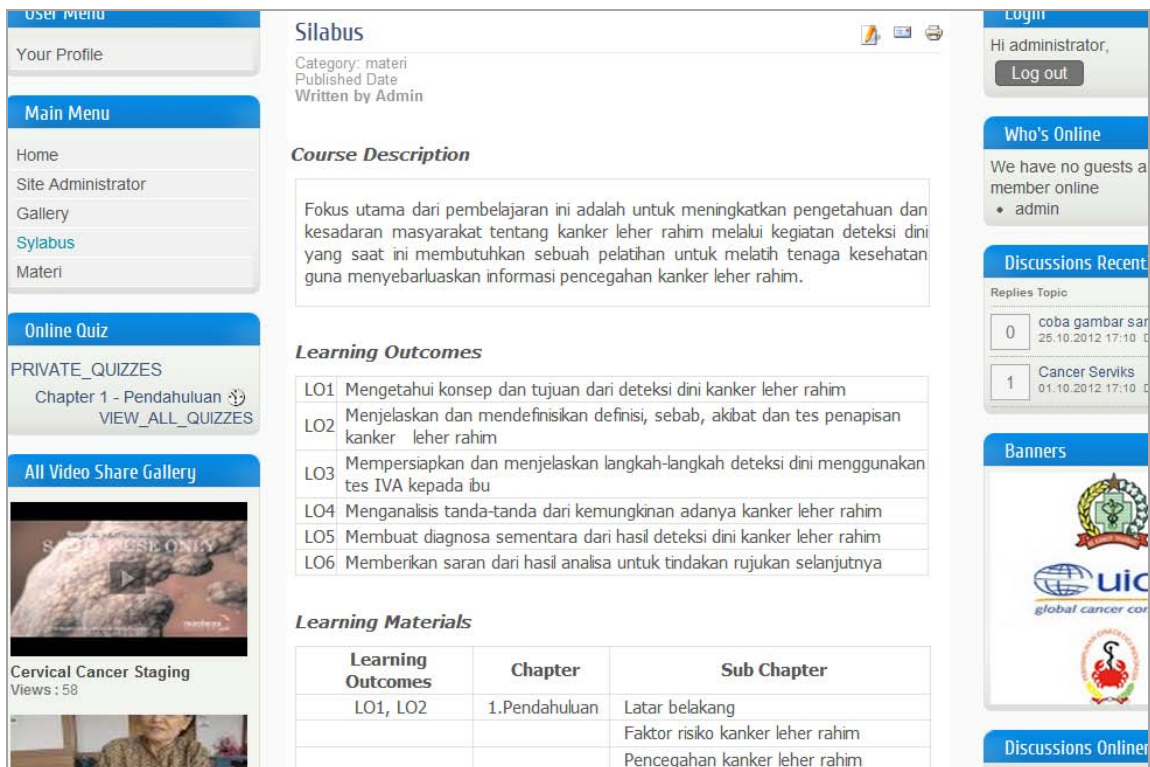


Figure 2. The Syllabus Menu

The display screen shown in Figure 3 is one of the chapter's view of learning material. In each chapter of the learning begins with a preview chapter to refresh the memory of the learning material in the previous chapter. On this page, user is equipped with tool-tips feature. This feature provides detailed information in the form of text or images when users hover the cursor on a specific term on the page display. The use of tool-tips feature was also used in the standard design of digital learning content, where a keyword term/specific vocabulary shows highlighted on the screen to provide additional information for the user. Users are expected to learn the material in each chapter within a certain time period.

The screenshot shows a web-based learning interface. On the left, there is a sidebar with 'User Menu' (Your Profile), 'Main Menu' (Home, Site Administrator, Gallery, Syllabus, Materi: Chapter 1, Chapter 2, Chapter 3, Chapter 4, Appendix A, Appendix B), 'Online Quiz' (PRIVATE_QUIZZES: Chapter 1 - Pendahuluan, VIEW_ALL_QUIZZES), and 'All Video Share Gallery'. The main content area is titled 'Chapter 2' and includes a 'Preview chapter 1' section with text about cervical cancer and HPV. Below this, the title 'BAB 2 HUMAN PAPILLOMAVIRUS' is displayed. The text discusses HPV and its transmission, with a tooltip over the word 'Uretra' explaining its function as a urinary passage. The right sidebar contains 'Login' (Hi administrator, Log out), 'Who's Online' (We have no guests and one member online: admin), 'Discussions RecentX' (Replies Topic: 0 'coba gambar sama video', 1 'Cancer Services'), and 'Banners' (uicc global cancer control).

Figure 3. Tooltips Feature

Figure 4 is the display of the online quiz from one of the learning topics in the learning material. Online quizzes in this online learning content are presented in the form of multiple choices in each chapter of the lesson. In addition, the online quiz sessions are time-limited accordingly as suggested in the design of digital learning content standards in British Columbia Ministry of Education. Online quizzes are available in each topic to provide a reference point in evaluating the online learners.

Rules are applied to the user in accessing the materials on the next chapter. Learners must achieve the standard score of the online quiz in prior chapter in order to be able to gain access for the next chapter material. In the case where the score of online quiz does not reach the standard, learners will be asked to retake the quiz and will be able to move on to the following chapter only when they achieve the standard score or above.

One of the features being presented in this online learning is the gallery, as shown in Figure 5. The gallery contains a collection of images from example of cervical cancer cases. This feature is designed to help user when they learn the learning material with the image that support the learning process visually. The picture in the gallery is also available for download, equipped with resize feature and connected with a chapter on the related material.

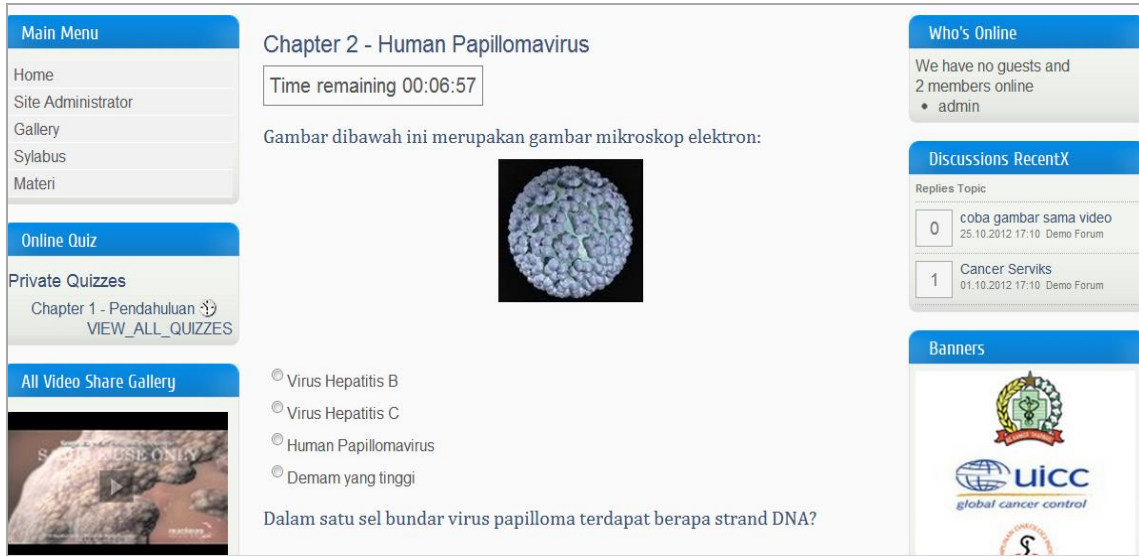


Figure 4. Online Quiz

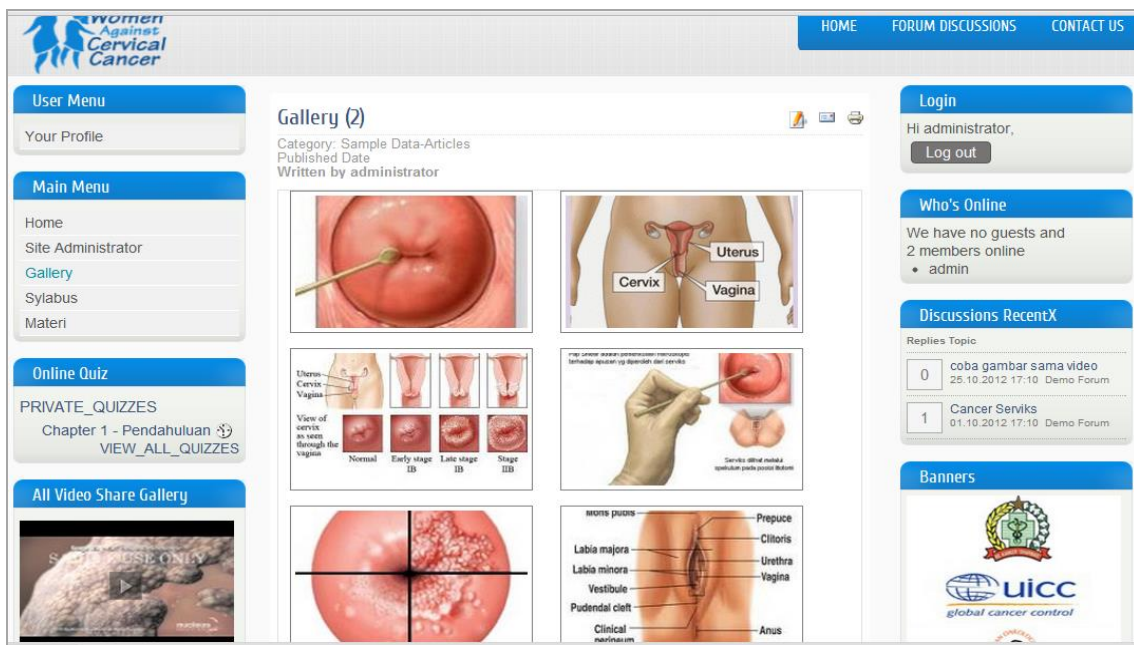


Figure 5. Display Screen for Menu Gallery

Figure 6 is the screen display when user selects one of the videos to run. Content rendering feature such as audio and/or video streaming assists learners to understand the complicated concepts and procedures which are difficult to be explained in plain text and graphics. Video streaming has proven to be of useful feature in delivering the subject matter to online learners whereby it allows learners to use visual and auditory senses in studying. However, it is advisable to keep the videos to be 15 minutes at maximum and to only incorporate to the point information to be able to maintain the learners' interest and attention.

Figure 6. Video Feature

Discussion

Data that were gathered and analyzed from the interview of specialist doctors and medical personnel at the Dharmais Cancer Hospital suggested some of the needs of participants of the online learning. They included the purpose of training, targets of training, the training procedures, and the expected training outcomes. The targets of the training were teenagers, adolescents, women, and medical practitioners who voluntarily involved themselves in socializing the cervical cancer early detection and prevention programs. It was also expected that the availability of online learning technology would stimulate others to participate and be enriched in knowledge and awareness of cervical cancer. The trainees would also be assessed in a final test at the end of the whole learning session. The assessment was concluded to be quite useful, but did not guarantee the absorption of the material to its maximum by learners because of the unstructured delivery of the learning material and the limited learning time allotted. Additionally, the data gathered from the interview provided information for developing portion, arranging portion, and evaluation portion in the Design of Instruction Learning Flow method by Jeong & Kim [4].

The observation conducted on location of cervical cancer early detection and prevention training program sessions held by the department of early detection of the Dharmais Cancer Hospital provided the requirement analysis for subject decision, introductory portion, and developing portion in the Design of Instruction Learning Flow method by Jeong & Kim [4]. In terms of learning content, the existing learning material was quite sufficient in supporting teaching and learning activities. However, the content was not structurally organized into specific topics yet and there was still the need to incorporate usage of other interactive media to keep the interest of learners and prospective learners. As for the layout of learning content, most cervical cancer early detection training programs were still conducted in traditional fashion, utilizing the use PowerPoint slides to deliver the learning material to trainees that were sometimes difficult to read due to the poor contrast background color of the slides.

Conclusion

This study concluded that in designing an online learning content for early detection of cervical cancer, the delivery of the learning material must be supported by syllabus, detailed information,

images, videos and discussion forum in order to help learners in understanding the learning material. Additionally, online quiz feature was required for evaluating the learning outcome of learners.

Conflict of Interest

The authors declare that they have no conflict of interest.

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