DEVELOPMENT OF IMCI MULTIMEDIA CD ROM TRAINING PACKAGE IN INDONESIA

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ABSTRACT

Integrated Management of Childhood Illness (IMCI) was a strategy developed by the World Health Organization and United Nations Children's Fund to decrease under-five children mortality rate. The IMCI multimedia program is a multimedia version of generic IMCI training in Indonesia. This paper will report the design and development of IMCI multimedia training package in Indonesia which was designed to give practitioners and students experiences to deal with future implementation of IMCI in their daily practice.

INTRODUCTION

Integrated Management Childhood Illness (IMCI)

World Health Organization (WHO) and United Nations Children's Fund (UNICEF) have addressed the challenge of death in children underfive worldwide by developing a strategy called Integrated Management of Childhood Illness (IMCI). As explained in official WHO website (2003), IMCI is an integrated approach to child health that focuses on the well-being of the whole child. IMCI aims to reduce death, illness and disability, and to promote improved growth and development among children under 5 years of age. IMCI includes both preventive and curative elements that are implemented by families and communities as well as by health facilities. IMCI is implemented by working with local governments and ministries of health to plan and adapt the principles of this approach to local circumstances.

IMCI Training

The training is designed as clinical skill achievement course for primary health care practitioners, including nurses and midwives. WHO and UNICEF has developed Model Chapter for Textbooks IMCI, and adapted by local circumstances in particular country (WHO, 2001). Ministry of Health Indonesia has developed 8 series of textbooks, facilitator guideline, chart booklet, pictures book, videos, mother counselling cards, and form recording for IMCI training material (MoH Indonesia, 2002). Therefore in real clinical practice in outpatient setting of primary health care, practitioners will predominantly use chart booklet and form recording to provide care.

The IMCI training consists of two learning methods: in-classroom tutorial and clinical practices under clinical supervision. The classroom tutorial is attended by small group of practitioners facilitated by an appointed supervisor. The clinical practices are conducted in-between classroom tutorial. Both methods are inseparable since the emphasis would be improvement of clinical skills for practitioners. To give example how the training conducted is showed in figure 1. For example, tutorial on assessment of certain conditions (cough and difficult breathing) will be followed by clinical visit/practices the next day on similar emphasis.

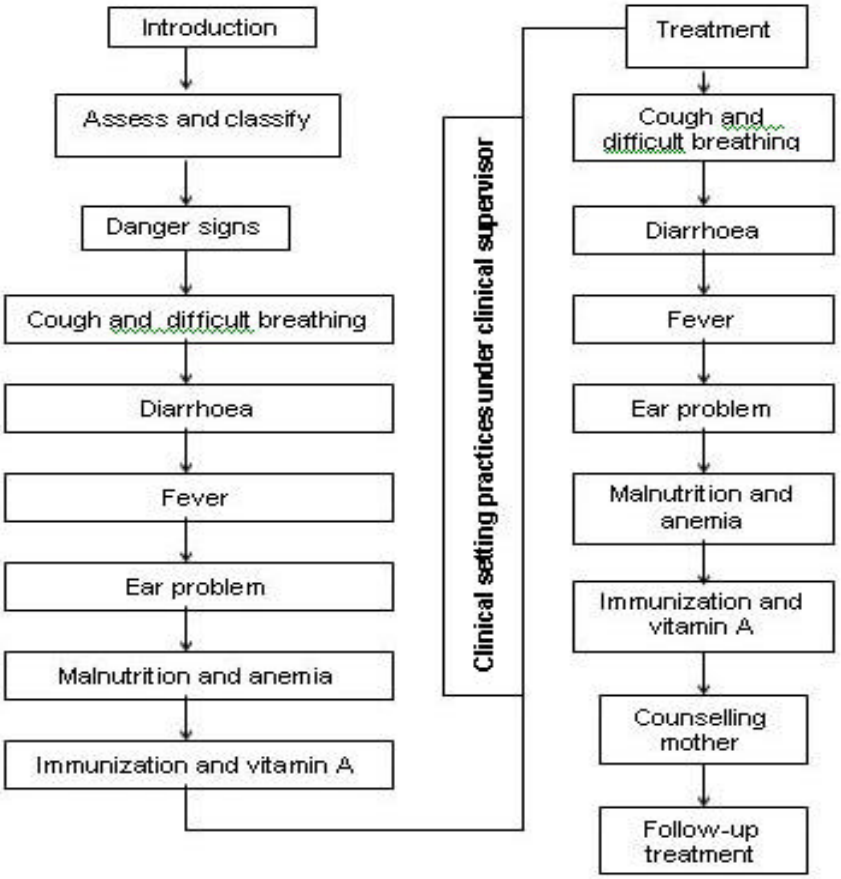

Figure 1.IMCI training model (MoH Indonesia, 2002)

GOAL AND CONTEXT OF USE

In real practice, few practitioners have the opportunity to accomplish IMCI training because of the lack of material, time, and money to have the training done. These are basically main reason behind the development of IMCI Multimedia Training Package. The development was aimed to provide practitioners with more examples of clinical appearances through videos and supporting further understanding of IMCI thus increasing their confidence to practice IMCI in their daily activities.

To practice IMCI in clinical settings, practitioners are required to understand its framework, recognise any clinical signs found in sick children, assess and classify major symptoms, and decide appropriate treatment for the child. They will need chart booklet which would assist them in recording case into form recording, and then complete overal algorithm of IMCI required. Some major clinical signs, which mostly fatal signs, are hardly found in daily practice nowadays. However, practitioners still have to recognize those signs since they are expected to be prepared when they see fatal clinical conditions. Thus, IMCI Multimedia Training Package was designed to be used as a stand-alone computer-assisted learning module which could used by practitioners as a self-directed learning resource. The program was intended mainly to help practitioners recognise clinical signs they might not find in daily practice and enhance their knowledge and skills required for practicing IMCI.

DESIGN AND DEVELOPMENT

Beta Version

The program was developed during 2002 using the multimedia authoring software: Macromedia Authorware. The development was financially supported by World Health Organisation (WHO) Indonesia and supported by Ministry of Health (MoH) Indonesia. The prototype was trialed by 19 nursery students in Gadjah Mada University on November 30, 2002.

Students generally reacted positively to the program, especially with availability of videos which hardly available during regular class session. Unfortunately, some computers used were lack of certain players needed to play animations and videos, therefore disrupted student activities on the program. The disruption of videos and sound/narration were common criticism. There was also suggestion for using Indonesian video, unfortunately they were not available due some technical reasons. Feedback from the student questionnaires was meaningful for improvements of the program in current development.

Current Program Development

The program start in July 1, 2003 and hopefuly will be accomplished by the end of November 2003. There are major changes in the program development after some reviews by IMCI experts and the trial result. The program was still developed using authoring software: Macromedia Authorware. The IMCI Multimedia Package generally will consist of core parts: core content modules, main menu page, chart booklet, glossary/index, search/find pop up, help/manual, and miscellanous pages. There were mainly structured in the program as seen in Figure 2. Core content modules were derived from 8 modules with emphasis on skill achievement course. Some important elements in the design of the program as defined by Kennedy (1997) and Orr et al (1993) such as interactivity, learner control, and display and multimedia elements used will be explained further down.

Interactivity

Interactivity refers to activities performed by both the learner and the computer (Orr et al, 1993). In our program, interactivity was built through interactive quizzes. The quizzes were put in-between core sub-topics presentation, either pre, in the middle, and post presentation. Generally there were two type of quiz: story-based questions and short drilled questions. The story-based questions constructed using simulation using either animation or videos. Then there would be some questions following the animation or motion video. Story-based questions were intended for understanding cases and developing construct of knowledge. Scoring was not used for this type of quiz. In other hand, short drilled questions consisted of random short questions, with time constraint, intended for quick recall of prior knowledge gained. Scoring was used for this type of quiz. Example screenshots of story-based question (using animation) and short drilled question can be seen in Figure 3 and 4.

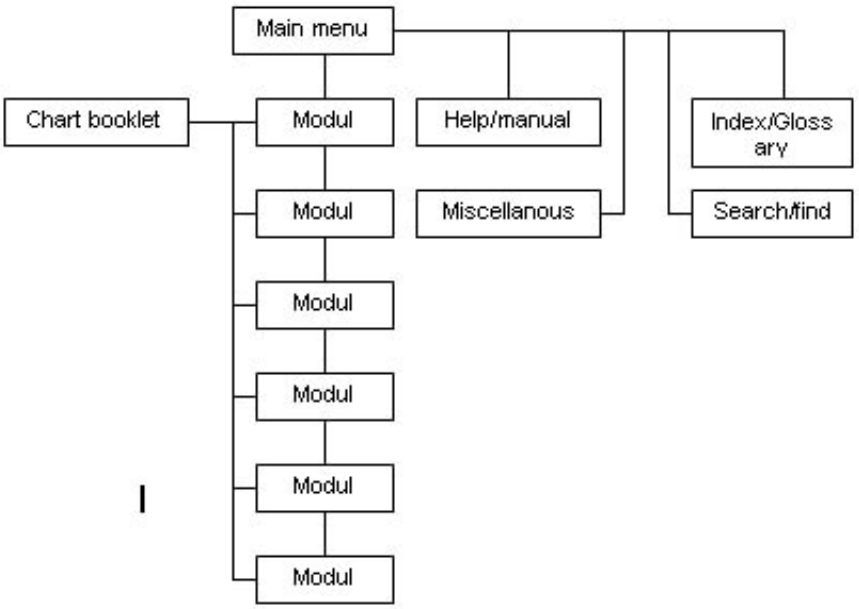

Figure 2.Main structure for IMCI training package

Figure 3: Screenshot of story-based question (using animation)

Figure 4: Screenshot of short drilled question (with time constraint icon)

Learner control

We did not support full learner control of content since the program required completion of certain topic before jump into next topic, or in other word there was hierarchical order. For example, a learner has to finish assessing danger sign before assesing cough and difficult breathing. However, icons linked to sections were provided to give learner flexibility returning to specific section and make further review (see figure 3 and figure 4).

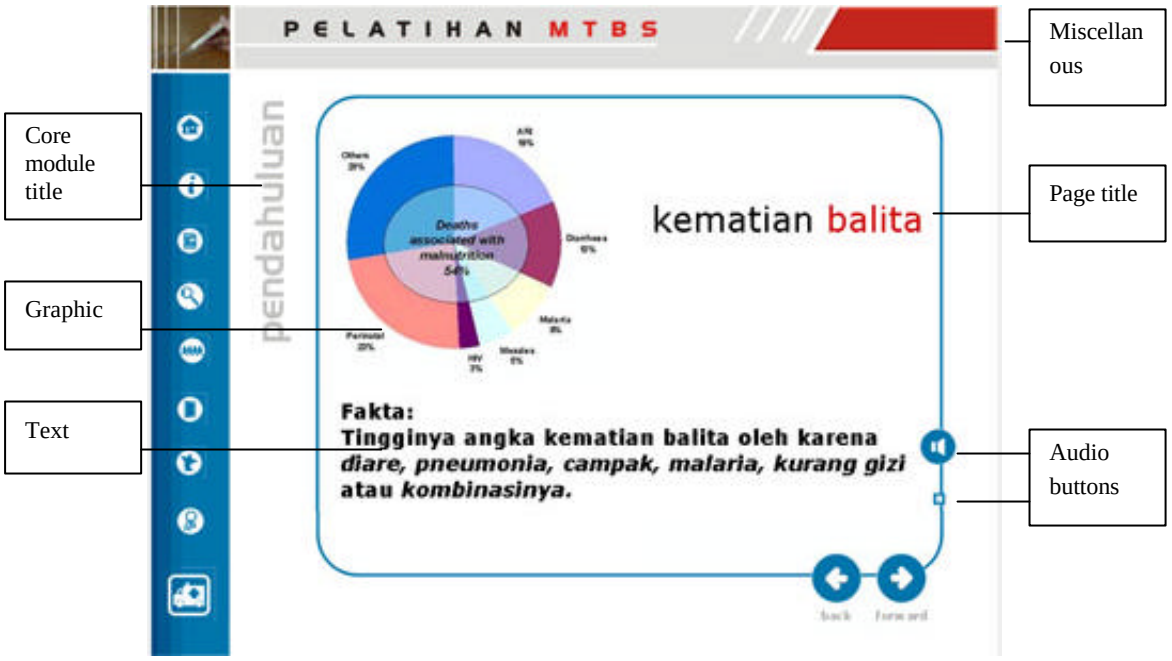

Figure 5: Screenshot of core content with supporting graphic and text.

Visual and multimedia elements

Visual is very important to enhance the effectiveness of the training program, as said by Orr et al (1993). Visual elements in this program include motion videos, pictures, graphics, texts, and animation. The core content was put on the center, refering to the layout guideline suggested by Orr et al (1993) and Boyle (2003). The content was presented in constant location, therefore should avoid any confusion for learners. The left side of the content was indicating core module where the learner stand. Example screenshot of core content with supporting graphic can be seen in figure 5.

Each page consisted of page title, supporting text and other supporting multimedia elements, such as graphic, motion videos, or animation. Since it were supported by narration, resume and pause buttons for audio were provided at left side of core content. Icon buttons used to link to other core parts were available at the left side to core content; they were linked to main menu page, chart booklet, glossary/index, search/find pop up, help/manual, miscellanous, team, browser, and exit the program. Since we also have disease sections in core content modules, we put icon buttons representing specific conditions at the left side i.e. for danger sign, cough, diarrhea, fever, ear problems, nutrition and immunization (as seen in figure 3 and 4). Additionally in each page was miscellanous clickable hotspot at top right of each page which would present additional stories and information related to specific topic in each page.

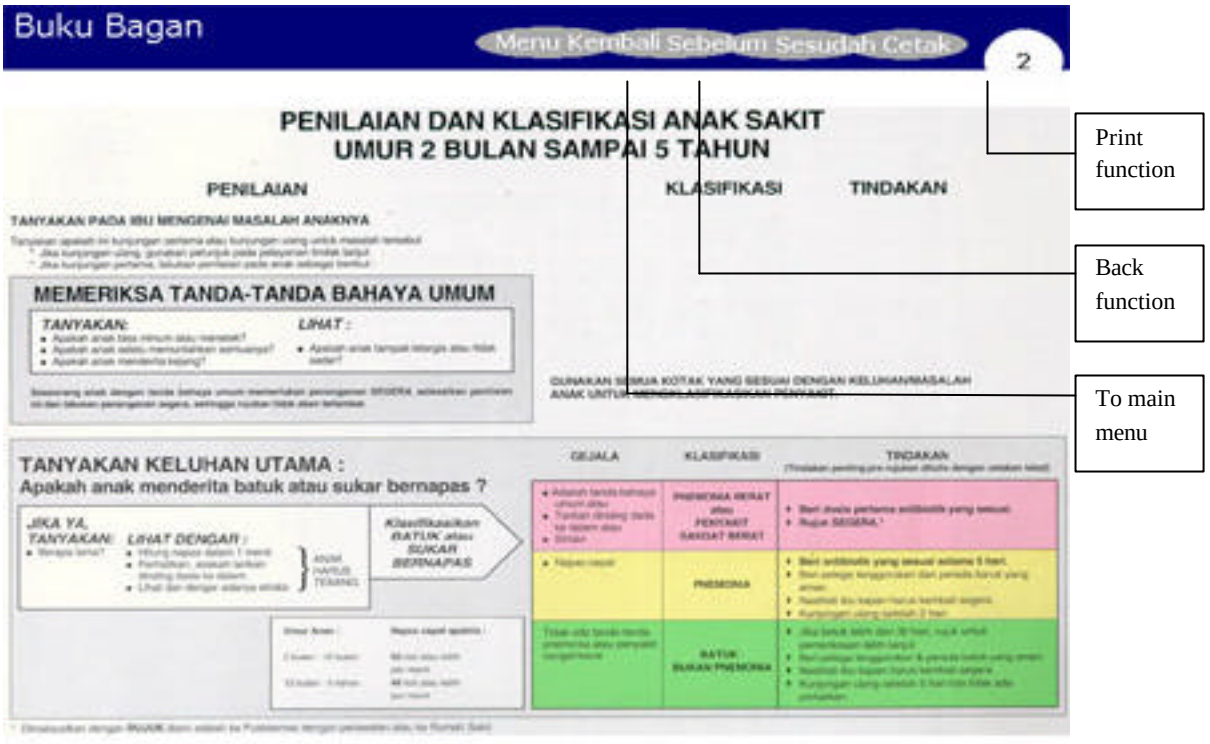

Figure 6.Screenshot of chart booklet

In the beta version, glossary/index and chart booklet were not included in the program. After several further discussions with IMCI experts, we decided to put them into the program. The reason behind were motivating and making learner accustomed to chart booklet for their daily practices. The chart booklet was then put the way it was in printed version, with similar size and page numbers.

Example screenshots of chart booklet can be seen in figure 6. To improve its interactivity, specific text in core content was linked to chart booklet, to make learner get used to chart booklet in daily practices. Back button was also provided to let learner return to preceding page. Print button was also available and learner could print chart booklet.

Figure 7.Screenshot of glossary/index

The glossary was taken from existing glossary inside textbooks. Therefore, we considered to add more vocabularies into the program in the future. Example screenshot of glossary can be seen in figure 7. The manual and audio/narration were in development this paper written.

DISCUSSION

The constructivist view of learning is defined as learning by constructing new ideas and knowledge based upon past and present experiences. Learning will then involves cognitive and social process (Damoense, 2003). In this view, learners should be active in constructing their own knowledge, which strongly influenced by what they already know. Kearney (2001) said that drill and practice and tutorial programs designing for reinforcement of concepts are still not enough and need to shift into encouraging active involvement for learners in constructing their own perspective. Damoense (2003) described a relatively new concept of engagement theory which will provides theoritical framework for learning in a technology based environment with emphasis on collaboration, interactivity and participation. There were other learning theories related to those emerging development of computer-based learning softwares as described by Sims (2000). Those theories lie behind utilisation of technology, especially using online learning.

Though the program might not follow any specific learning theory, any important elements required for a good instructional design have been addressed. Its interactivity has been enhanced with intensive questions and feedback within the program. The extent of short text but meaningful was becoming important issue in the program. Utilisation of relevant graphics/pictures and animation was increased to make the program more stimulating and interesting. The visualization in multimedia program is important indeed, since it is believed as the main point of advantages of multimedia program. Stimulating and interesting as important elements of the program have been addressed to avoid drop out rate utilisation the program.

The other challenge was the fact that computer literacy in Indonesian population was only 0.5 percent as said in Gatra Online, an online Indonesian national magazine (2003). Simplicity and easiness of use of the program are very important if it is intended to be used by broad level of health practitioners and students. The challenge would be developing a program which has greater emphasis of easiness of use without dismissing learning theory concepts and could help learners construct their knowledge about IMCI.

SUMMARY

The program is in proccess of its accomplishement and hopefully will be finished by the end of November 2003. The next stage after development accomplished will be formative evalution of the program to ensure that the program will be useful for practitioners and students.

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