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Full Length Research Paper

Developing distance learning method for health practitioner in Jakarta and its surroundings, Indonesia

Rr.Tutik Sri Hariyati*, Elly Nurachmah and Sigit Mulyono

Faculty of Nursing, Universitas of Indonesia, Indonesia.

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Indonesia is a developing country which needs to increase its health practitioner's knowledge and skill. This study aimed to identify the readiness of infrastructure and human resources in implementing a learning method based on information technology, specifically distance learning model. Distance learning model was chosen since its flexibility and ability to increase active learning and the exposure toward information technology. The research operation was carried out in two years, started with identifying the problem, searching for problem solution, and evaluating the implementation. The sample was taken with purposive sampling with Questionnaire tools and web visitor's tool. The result was analyzed using descriptive analysis; beside that, it was also analyzed by the number of web visitor and active level on the web's analysis. Infrastructure assessment's result showed that 98.7% health services had used computer, however is only 50.9% of it provide internet access. The number of web visitors after distance learning training were 1, 215 people, or 40 people a day. The result of this research has not shown an optimal result. However, as a developing country like Indonesia which still need improvement in its infrastructure and the exposure toward the information technology for health practitioners, this situation proved that distance learning model has a good chance to develop.

Key words: Active learning, distance learning, informatics technology, internet, public health practitioner

INTRODUCTION

Health is one of the central areas of development focus in Indonesia. The development objective in the health sector is to increase awareness and ability of every citizen to live a healthy life so that he/she can manifest an optimal health degree (Health Regulation, 2009).

The most influential component on solving health development issue is human resources. High quality and competent resources in health sector will improve the quality of health services and the quality of public health. Science and technology development demand quality improvement of both formal and informal education of health personnel resources. Hari Wibowo (an education observer) said, "education problem is the reason why the availability of education for people is still very low." (www.apindonesia.com).

Adult education should embrace the principle of "long live learner". In other words, process of getting knowledge is not only waiting for an opportunity to study formally, but it should seek oopportunities to learn independently. "Long-life learning" is a simple concept, which human living will have the need to learn (Field, 2000).

Distance learning method is a method of independent and continuous learning. Learning model is expected to be a quality learning breakthrough. This model emphasizes on more active and independent learners, and on basis learning that can be implemented not only in formal schools but also can be done any time (Hariyati, 2006).

Jones (2004) stated that distance learning means provide the opportunity for staff to improve their professionalism, increase knowledge about information technology, and get access of the latest information. In addition, distance learning also reduces the level of staff absenteeism on training session (DOH, 2001 in Jones, 2004).

One of the advantages of distance learning its very

*Corresponding author E-mail: tutik@ui.ac.id or rrtutik@yahoo.com.

flexible time and place. The process of distance learning can be synchronous, as teachers and students can interact in the same time though not at the same place, such as through teleconference. In other hand, it could be asynchronous, in which the interaction both in a different time and place. For example, it can be conducted through media, compact disks (CDs), and internet base: web base-learning (Kozlowski, 2002). Web-based Internet is one method that facilitates the learner's performance. Web-based allows students to quickly and easily access Internet content from a variety of sources, and content areas, while also increasing time on doing task (Forbes, 2004).

In Indonesia, a distance learning model has been conducted on nursing students between the Universitas Indonesia and Universitas Riau, but implementation excluded the health personnel who served in hospitals and health centers (Hariyati, 2010).

Based on the health problems in Indonesia, and he minimum opportunity for health practitioners to get a higher education formally, this research was conducted. The expected outcome from this study is improvement of health practitioner's learning opportunity using the technology-based media with distance learning model. This research question is how the readiness of human resources and infrastructure in the use of distance learning models, and how perceptions of distance learning methods? After the training is done how to use a web that has been provided?

Objectives of the study

(1) To identify the readiness and skills of health personnel resources, infrastructure tools, and management support in enhancing knowledge through information technology-based learning
(2) To develop distance learning with web base learning model for health practitioners in Jakarta and its surrounding
(3) To identify user satisfaction and perceptions of learning after accomplishing distance learning training
(4) To evaluate the effect of distance learning training toward the number of visitor and the activity in the web base learning media

MATERIALS AND METHODS

This research has been conducted for 2 years, used the operational research studies. The operational research consists of four steps: need assessment, development of distance learning model for the health practitioner, development of web-base learning for distance learning media, and evaluation. "Operations research studies" (OR) was chosen as the approach used in the research because operational research means identifying and solving problems, providing basic planning, coordinating training and evaluating function. Operations research also finds solutions and becomes an alternative to the inconvenience of existing programs (Fisher, 1998).

The research activity began with identifying problems involving the identification of health practitioners' skills and motivation to operating computers, and identifying computer infrastructure and management support in improving health practitioners' skills through active learning method. Then, research was continued by developng model includes website development: www.fik.ui.ac.id/pkko, learning model development, learning media development and operating modules for web-based learning. Research evaluation was held to identify the perception toward the web-based learning model and effect of web-base learning training. This evaluation was taken by exploring the perception toward the experience in using web-base learning model after the respondents were trained by distance learning method. Meanwhile, the data about the effect from the training of distance learning method collected by recording the number of web visitors and observing the activity of health practitioners in the providing web.

Samples in the first year were 234 public health practitioners from Jakarta and surrounding areas. Sampling method used was purposive sampling, with inclusive crieteria as health practitioners who work in health centers or health departments. In order to obtain appropriate sample, the researchers collaborated with ministries of health, so the department of health officer will select an appropriate sample. The sample in this study on second year was taken by using a purposive sampling method, with inclusive criterias same as the previous year (126 respondents). The sample supposses to the same respondent as in the previous, but some respondents did not come, so the taken approach was convenient sampling. In brief, the phases of the research can be seen in Figure 1.

Ethical consideration

Both the content of research proposal and the problem issue had been approved by The Indonesian Ministry of Research and Technology Foundation. Full disclosure of information to respondents was done. Study subject anonymity was ensured as no names were used on the questionnaires. Respondents filled in the questionnaires according what they feel and without any forces to do otherwise. All on-form consents had been approved and signed by respondents.

Instruments and data analysis

The instrument used in this research is questionnaire and web tool. Questionare consist of two components which relate to the readiness of information technology infrastructure, the ability and the readiness of the health practitioners in using the information technology. The second questionnaire was given to the respondent after the respondent accomplished the training of distance learning method. This questionnaire aimed to explore the user satisfaction perception in using the information technology-based learning method and the motivation to utilize the distance learning method. Data obtained from questionnaires were analyzed by descriptive analysis approach. The second instrument is a web tool that identifies the number of web visitors after the web-distance learning training.

RESEARCH RESULTS

Research results are presented as follows; from Table 1, it can be concluded that computers are available at 98,7% workplace, but there is only 50.9% of it has internet access. However, the internet access available

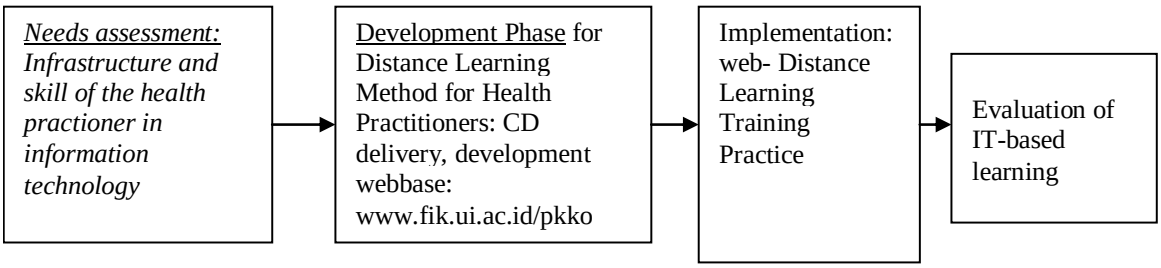

Figure 1. Various phases of the research.

Table 1. Infrastructure Readiness of information technology (IT)-based learning method (n = 234).

No.	Variable	Total number	Percentage
	Computers at work		
1	(a) Available	231	98.7
	(b) Not available	3	1.3
	Internet access at work		
2	(a) Available	119	50.9
	(b) Not available	108	46.1
	(c) Abstention	7	3

Table 2. Health practitioners' readiness and ability to utilizing Information Technology.

No	Variable	Total number	Percentage
	Using Ms.Word		
1	(a) Incapable	56	23.9
	(b) Capable	178	76.1
	Using sheets (Ms. Excel)		
2	(a) Incapable	91	38.9
	(b) Capable	143	61.1
	Using the Internet		
3	(a) Incapable	148	63.2
	(b) Capable	86	36.8

was still need to be optimized.

From Table 2, it showed that respondents' skills in Ms. Word were dominated by capable respondents (76.1%); respondents' Ms. Excel ability was predominantly capability respondents (61.1%), while the in capable one was 63.2%. This condition implied that the computer basic skill for Ms. Word and Ms. Excel had been good; however, 63.2% of respondents showed low ability in using the internet. This situation needed to be considered due to the fact that the web-based distance learning method developed would need the ability to use the internet from the user, so that before the implementation would carry out, the *internet* training for using the distance learning method had been held.

From Table 3, it can be concluded that respondents were lack of curiosity to active learning (62.4%). The support given from the management was very important in order to succeed the active learning. The support could be in the form of infrastructure availibility, time availibility, and moral support for the staff members. The result from this research showed that only 50% of the management gave the positive support to enhance the active learning like distance learning.

Although the infrastructure, human resources ability, and support in promoting the technology-based learning were not maximize yet, the team developed an information technology based learning method to elevate the knowledge of health practitioners actively. The purpose of this development is to bridge the health

Table 3. Health practitioners' perception on the readiness for active learning and the environment support for a technology-based learning (n = 234).

No	Variable	Total	Percentage
	Curiosity		
1	(a) Lack of curiosity	146	62.4
	(b) Good level of curiosity	88	37.6
	Support		
2	(a) Lack of support	117	50
	(b) Good level of support	117	50

practitioners who already had the ability, infrastructure, and motivation to learn but lack a chance to gain a higher formal education. The distance learning method was chosen on the grounds that it allows the learning process without being restricted by a particular time and place. More importantly, this method allows them to have an independent learning.

A website has been developed to achieve this purpose: www.fik.ui.ac.id/pkko/. The facility provided by the website is media for training; compose mail, news, article, research manuscript, and discussion forum. To join the

Figure 2. Front view of the website: www.fik.ui.ac.id/pkko.

Table 4. Respondents' Perception on the Benefits of IT-Based Learning (n=126).

No	Variable	Σ	%
1	As an alternative learning method		
	(a) Disagree	0	0
	(b) Agree	15	12
	(c) Strongly agree	111	88
2	As a media of improving knowledge		
	(a) Disagree	1	0.7
	(b) Agree	18	14.3
	(c) Strongly agree	107	85
3	As a media of improving perspectives		
	(a) Disagree	0	0
	(b) Agree	23	18
	(c) Strongly agree	103	82

Table 5. Respondents' Perceptions about the user satisfaction of IT-based learning methods (n = 126).

No	Variable	Σ	%
1	To get information more easily		
	(a) Disagree	0	0
	(b) Agree	23	18.3
	(c) Strongly agree	103	81.7
2	To communicate with each other		
	(a) Disagree	0	0
	(b) Agree	36	28.6
	(c) Strongly agree	90	71.4
3	It creates difficulties		
	(a) Disagree	121	96
	(b) Agree	3	2.4
	(c) Strongly agree	2	1.6
4	Very flexible		
	(a) Disagree	3	2,4
	(b) Agree	56	44.4
	(c) Strongly agree	67	53.2
5	Enjoyable		
	(a) Disagree	1	0.8
	(b) Agree	48	38
	(c) Strongly agree	78	61.2

web, health practitioner should register for a membership by filling the personal data and making a user name along with a password. Every health practitioner may communicate and share information with other health practitioners from any place, not limited to where they are at that moment; they do not have to meet and do so at the same time. These conditions will strengthen the learning community that is expected in order to develop the health practitioners' knowledge as a provision to provide services to the community Figure 2.

In Table 4, we can see that respondents strongly agreed that IT-based learning can be an alternative learning method (88%), IT-based learning was also perceived to increase knowledge by respondents in Jabodebek (strongly agree 85%). Respondents strongly agreed that IT-based learning can improve perspectives (82%) Table 4 suggested that the majority of the respondents strongly agreed that distance learning could simplify and improve the knowledge, and become an alternative learning method.

From Table 5, it can be seen that the majority of respondents considered that IT-based learning methods were create any difficulties, thus the user satisfaction in

simplicity and flexibility method was high.

After the face-to-face training, the study continued to the activity with web base media using distance learning model. The distance learning's evaluation result then being evaluated. The evaluation was done through counting the total visitors of the www.fik.ui.ac.id/pkko web, the active level of web members' activity in uploading general articles and research manuscripts, and the contribution level of the member in reading and downloading the articles on the web. This whole evaluation process was carried out until November 2008.

The evaluation results since May 2007, when the web was introduced for the first time, until November 2008, there were 23,088 visitors. The visitors were not only the participants of this research, but also other health practitioners. This condition showed that the participants, who involved in this study, transferred their knowledge to the other health practitioners. There were 76 visitors who uploaded articles, both related to health issues and general issues. Meanwhile, until the end of the study, there were 823 visitors who read and downloaded articles from this web.

The average number of visitors was 1215 visitors per month. This amount presents a positive finding, viewed from quantity standard, for a developing country like Indonesia despite its minimum infrastructure and human resources.

During 19 months, the average monthly visitors were 1,215 visitors. This number did not represent a good quality, however for a developing country like Indonesia; this quantity was quite impressive due to the fact that there were less supportive infrastructure and human resources. Furthermore, the active level of the visitors who upload their articles were 76 visitors, and the visitors who followed on-line training were 823 visitors. This condition proved that IT-based learning can be developed in Indonesia and has a good chance in improving the knowledge of health practitioners. Therefore, IT-based learning method should be supported in order to achieve the higher level of knowledge of health practitioners despite their lack of spare time to get higher formal education.

DISCUSSION

This study elaborates that not only the human resource capacity in operating IT is still under the moderate level, but also the infrastructure, motivation in active learning and management support are not optimal yet. This study promotes a training related to the objective and the usage distance learning, and basic training of web. The result of this research appropriate with the theory of Simonson (2004) which stated that distance learning need particular attention need particular attention, since the distance learning program required a careful process and implementation. The preparation for distance learning method could be held by induction and initial training process. The induction and initial training shouldbe as much about values and mission as about immediate tasks in hand (Panda, 2003).

After training of information technology-based learning, the practitioners' perceptions on the implementation of it were assessed. Respondents stated that information technology-based learning can improve knowledge, perspective, and communication. They also said that it is flxible and fun.

In general, some respondents considered information technology-based learning implementation is good, while the other ones regard it as not good enough. This condition was likely caused by the fact that health practitioners were unfamiliar with active learning method since most of their time were spent to carry out their duty as health service providers.

The general result from this study stated that the implementation of distance learning method has not maximal yet. Some of the hindrances of this research were human resources' ability, the supportive infrastructure, and health practitioner's motivation to actively learn.

The result of this research matched the theory of Recce and Walker (2000) which stated that the success of distance learning depends on the identification of learning needs, learning styles and infrastructure before embarking on distance learning. Skiba (2005) stated that distance learning model would become ineffective if there are obstacles to acquire access of information, infrastructure constraints and lack of skills in IT. A study on nurses which was conducted by Attack (2003), presented that web-bases courses gave a positive effect toward the nurses's knowledge compared with traditional training. Nevertheless, some students in nursing school believed that the weaknesses of this method were absence lack of direct feedback given by the lecturers, the absence of role model, and the dominance of non verbal language. However, the absence of role model can be solved by using dual mode, which is a mixture of face-to-face traditional system with distance learning method.

The readiness of facilities also affected the implementation of distance learning method. A study which was carried out by Hariyati, 2010 on nursing students in Faculty of Nursing Universitas Indonesia in Jakarta (n = 253) stated that 49.7% of infrastructures and facilities has not met the standard yet to implement a distance learning method. Moreover, this condition also affected the success of distance learning method.

The lack optimal support in terms of IT-based learning facilities is another constraint of its implementation. This condition is in accordance with Hariyati stated in 2006 that the success of trainers and learners in a distance learning course is determined by the ability to operate a computer, upload, download, browse and search in English. English language skills are required because most sources of literature and journals are written in English. Connectivity speed and information technology

reliability are the keys of successfull distance learning. The LMS (Learning Management System) readiness that manages the learning process also plays an important role in the sustainability of distance learning process. Problems in distance learning were also detailed by Valentine (2002), stating that problems that often arose were stating low quality instructors, misuse of technology, hidden cost, and the attitudes of instructors, students, and administrators.

The implementation of IT-based learning has to have sustainable programs considering the fact that this learning process has not populer yet among health practitioners. Based on the data obtained in 2007, health practitioners' motivation to learn independently was still low so management and infrastructure support were necessary in the implementation of this model.

This situationproved a theory that success of a teaching-learning process is influenced by several factors include the physiological aspects of attitudes, talents, interests and motivation. The success of learning process is also influenced by the social aspects of society, tools, media, and management support. In that study, the success process was determined by the distance learning model, and the infrastructure and management support from place where health practitioners work. The last aspects that affect teaching and learning process are learning strategies and the motivation of learners; each health practitioner must possess active learning strategies and high motivation to enhance knowledge of health services. The interaction during learning session was also important to be noted in order to measure the success of a method (Maushak, 2004).

CONCLUSION AND SUGGESTION

This research used operational research method to identify the needs and perceptions on IT-based learning from some public health practitioners in Public Health Centers and Health Offices in Jakarta and its sourrounding area. In this study the IT-based learning model was developed in order to increase the knowledge of health practitioners independently, unlimited by the time and place border. The result of this initial study has not shown an optimum result. However the result of the research concludes that informatics technology-based learning is potential to be implemented by the public health practitioners in Puskesmas. Therefore, policy and support from the institution's leader are needed for successful informatics-technology learning program. The supporting infrastructure and motivation to use this method is the success key of the program.

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