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Development of a training program for enhancement of technology competencies of university lecturers

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The objectives were: (1) the components of the technology competencies of university lecturers were studied. The researchers also described and analyzed (2) the development of a training program for enhancement of the technology competencies of these lecturers. Also, the researchers evaluated (3) the program they had constructed. The sample population consisted of 859 lecturers with academic ranks at government and autonomous universities in survey research and 28 Ramkhamhaeng University (RU) lecturers for evaluated the training program. The training program was constructed such that it would be congruent with the results of the study of the components of technology competencies. While evaluating the training program form testing the knowledge, capabilities, and attitudes of the lecturers, It was found that: (1) Three components of the technology competencies of university lecturers were described by 69 variables. The factor loading of the components were ranged between 0.427 and 0.798 and the variance could be explained at 64%. (2) The mean scores for the technology competencies of university lecturers in the aspects of knowledge, capabilities, and attitudes after the completion of the program were higher prior to its commencement at the statistically significant level of 0.05. (3) In respect to the level of appropriateness of the program, the lecturers participating in the program viewed the overall level of appropriateness as high. These studies suggest that providing lecturers with the appropriate training should help increase their technology competencies.

Key words: Technology competencies, training program, program development, university lecturers.

INTRODUCTION

To function properly, university lectures needs to be skilled in technology and communication methods in this twenty-first century. They must have Information communication technology (ICT) knowledge, capacities, and skills as tools to be wielded in organizing education, instruction and study, and curriculum development. Also, ICT is a resource used to retrieve data for knowledge management and professional development. Integrating the Internet and applications are prerequisite for the ability to prepare contents for a variety of instructional media (Niess et al., 2008, pp. 6-7). In educational reform, an integration of information technology and instructional media in classrooms with the use of modern technology and a new role of teachers and students is needed. In carrying out the reform of education, it is imperative to integrate modern technology and the new roles assumed

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by students and teachers so as to encourage the development of a new learning environment, promote cooperative learning, and stimulate interaction. This development will be of great assistance to lecturers in carrying out their new duties in a new educational context. Consequently, lecturers must develop new teaching and learning management skills, and innovation for the use of technology as applied to learning. The professional development of lecturers presupposes appropriate perceptions and the capacity to use the knowledge of technology in making instruction more efficient (UNESCO and Microsoft, 2011, pp. 8-9).

Therefore, lecturers should be knowledgeable and capable in applying ICT to education in the following aspects: (i) having knowledge and skills in information and communication technology (ICT) as applied to instruction and study; (ii) creating and developing e-learning media; (iii) using the Internet for data retrieval; (iv) having skills in using multimedia in instruction; (v) having knowledge of computer-assisted instruction (CAI); (vi) applying information technology to educational management; (vii) developing curricula and instruction and study methods for network systems (web, online) and; (viii) learning Photoshop methods (Malithong, 2005). The Policy and Planning Office of the Permanent Secretary, Ministry of Education (2013) summarizes the ICT needs of teachers and lecturers as follows: Open-source software (OSS) should be developed and developing instructional media should be considered tantamount to writing academic works. Also, inter-dependent agencies should develop instructional media while teams should be assigned to develop instructional media that will generate student interest. The curriculum for each study level in mathematics, science, and information technology should include ICT. In addition, personnel development should include applied ICT as an instrument for the performance of duties and e-training and e-learning should be used in training as well. Therefore, technology competence as a basis for a professional career is an indicator for the professional development of new teachers and lecturers under the strategy of educational reform (Pahe, 2010).

In addition, in the context of society and ASEAN culture, lecturers need to have the ability to use IT communication; they should learn to use technology in performing work involving academic development, instruction and study, and fostering research, that is, they should have ICT skills for everyday life, for instruction, and for research; they should be able to access databases for bodies of knowledge stored in international databases at ASEAN universities; they should be able to use technology to communicate using social media; they should be able to conduct instruction via network systems; they should be able to carry out studies using tele-conferencing or websites; and they should be able to use mobile phone technology for communication in connection with instruction and study (Pechting, 2004; Kwanmuang, 2005; Cruthaka, 2013).

Lecturers' competencies are correlated with their roles, duties, and responsibilities in the aspects of instruction, study, and curriculum development; research; academic services; and the maintenance of arts and culture. The development of such competencies requires training programs for the fostering of knowledge, capabilities, and good attitudes on the part of instructors produced by means of efficiently integrating technology with the roles and duties for which they are responsible. Lecturers must meet up the demands stemming from rapid changes in contemporary society and culture in order to be prepared for future changes. The training program will include an outline consisting of learning units, contents of the curriculum, and learning processes designed to accommodate participants. The output allows participants to obtain new knowledge by giving them opportunities to learn through experience. (Oliva, 1992, p. 9; Armstrong, 1989, p. 4; Ornstein and Hankins, 2004, pp. 10-11). On the basis of the study of necessities in the use of technology in accordance with the roles, duties, and responsibilities of university lecturers, the researchers were interested in studying the necessary competencies in technology for university lecturers. The data obtained from the study of necessary competencies in technology are used to construct a training program for enhancing the technology competencies of university lecturers. University lecturers should then be prepared in a fashion such that they have competencies in using technology in the course of playing their roles, carrying out their duties, and fulfilling their responsibilities. This will create educational opportunities for Thai society, strengthen educational institutions, and increase the educational capabilities of educational institutions in the future.

Review of literature

In the 21st Century, more and more citizens are expected to use technology to access and communicate information, and teachers manage electronic information from an ever-widening range of resources and in a wide variety of formats. In Thailand, there are many studies that aimed at integrating ICT into teaching to solve the problem of lacking ICT competencies. (Raob et al., 2012, pp. 13-22). After reviewing the literature, Seventy four competencies were identified as the technological competencies for University lecturers related to lecturer' role and responsibility into instruction and study; research; community services; and keep on traditional and culture. So the lecturers ought to develop tech-nological competencies with training program, because the training program design refers to the organization and coordination of training program. Such as a training program design to plans in technology competencies

domain for university lecturers, having collected and analyzed essential data and identified goals, would need to create or select a general pattern a design for the learning opportunities to be provided. The alternatives would be: (1) a subject design utilizing specific studies in the technology competencies; (2) a scope and sequence plan built around a selection of persistent technology competencies needs; (3) an analysis of the essential skills competence to be taught as the basis of activity. A training program focus on developing a set of technology competencies needed to perform a job, because these technology competencies are often expected to be developed over time, curricula and the courses within the curricula are completed over an extended time period. (Saylor et al., 1981, pp. 38-39; Noe, 2013, p. 205)

Research objectives

The objectives of this study were: (1) To study the components of the technology competencies of university lecturers. The researchers also described and analyzed (2) the development of a training program for enhancement of the technology competencies of these lecturers. Also, the researchers evaluated (3) the program they had constructed.

RESEARCH METHODOLOGY

The research was developed using a research and development (R&D) approach. This was done using the following steps: Step One: First, the researchers studied the components of the technology competencies of university lecturers used to develop a training program for enhancing the technology competencies of university lecturers. The researchers selected a sample population consisting of 859 full-time lecturers holding academic ranks using the method of disproportional random sampling. These lecturers were from 14 government universities and 14 autonomous universities making a total of 28 universities. The research instrument used to collect data was a five-rating scale questionnaire eliciting data concerning the necessary technology competencies of university lecturers. Additional data were collected through synthesizing data obtained at a focus group discussion with experts. The quality of the research instrument was established in view of the analysis that showed it displayed Cronbach's α (alpha) coefficient at 0.975. Data were analyzed using exploratory factor analysis where by the principal component were extracted and thence, subjected to orthogonal rotation using the varimax method.

Step Two: The researchers developed a training program enhancing the technology competencies of university lecturers. The training program was constructed such that it would be congruent with the results of the components of technology competencies study. The structure of the components of the training program consisted of problems and necessities, principles, goals, training units, contents, activities and training methods, training materials, and measurement and evaluation. The outline of the training program was evaluated by seven experts for appropriateness and internal coherence. Then, the evaluation results were used to improve the training structure to make it more appropriate. Step Three: Using a sample population of 28 Ramkhamhaeng University (RU) lecturers, the researchers evaluated the training program. The research instruments consisted of an evaluation form for testing knowledge, capabilities, and attitudes couched at the respective reliability levels of 0.89, 0.97, and in addition to a form used for evaluating the appropriateness of the program after experimental testing had been conducted. The researchers collected data by means of an experiment to test the training program using the members of the sample population. Speakers or experts in each field provided information. The technology competencies of university lecturers were tested in respect to knowledge, capabilities, and attitudes prior to and after the experiment with members of the sample population. The appropriateness of the training program was evaluated after the training was completed. Using techniques of descriptive statistics, the researchers analyzed the data collected in terms of mean and standard deviation. A t-test technique was also employed by the researchers.

RESULTS

1. The findings showed that slightly more than half (52.90%) of the university lecturers examined were females with a plurality of slightly more than a quarter (26.08%) between the ages of thirty-six and forty. A majority of slightly more than a half (51.30%) were master's degree holders with a large majority of almost seven tenths (69.50%) as lecturer. Less than a twentieth (4.80%) was employed by Silpakorn University.

2. Factor analysis of the major factors applying orthogonal rotation using the varimax method showed that technology sub-competencies were in congruence with components of the same factors. No items were found that were in congruence with the variables. The remaining 69 variables were rotated again and six components were found which did not bear relationships with one another and were accordingly mutually independent. These variables had loading factors greater than 0.40 (>0.40) and Eigen values greater than or equal to 1 (≥1). Variables were explanatory of components with more than three variables. The technology sub-competencies for 69 items were explanatory of variance at 64.16%. There are three components of technology competency and they are analyzed as follows: (1) technological knowledge could be explained by 15 variables with loading factors ranging from 0.427 to 0.792; (2) technological capability could be explained by 37 variables with loading factors ranging from 0.436 to 0.755; and (3) attitudes toward technology could be explained by 17 variables with loading factor ranging from 0.518 to 0.798. Each component consisted of technology competencies in five aspects: (1) instruction, study, and curriculum development; (2) research; (3) community service; (4) administration; and (5) information technology and communication. This is shown in Table 1.

3. In evaluating the appropriateness and internal congruence of the outline of the training program for

Table 1. Loading factors classified by component technology competencies.

component technology competencies	number of items	loading factors
Technology competency knowledge		
1. Instruction and study and curriculum development	4	0.700-0.772
2. Research	1	0.609
3. Community services	1	0.634-0.753
4. Management technology	4	0.427-0.665
5. Information technology and communication	3	0.427-0.792
Total	15	0.427-0.792
Competency in technological capability		
1. Instruction and study and curriculum development	9	0.436-0.677
2. Research	7	0.436-0.755
3. Community services	6	0.453-0.693
4. Management technology	5	0.552-0.668
5. Information technology and communication	10	0.464-0.708
Total	37	0.436-0.755
Attitudes concerning technology		
1. Instruction and study and curriculum development	4	0.518-0.634
2. Research	4	0.575-0.747
3. Community services	2	0.783-0.784
4. Management technology	2	0.741-0.798
5. Information technology and communication	5	0.648-0.797
Total	17	0.518-0.798

enhancing the technology competencies of lecturers, the researchers found the following: The outline of the training program comprised the conditions of problems and necessities, principles, objectives, training units, contents, activities and training methods, training media, and measurement and evaluation. The content structure involved eight learning units: (1) technology policy in higher education institutions; (2) the role of technology in higher education institutions; (3) technology and the characteristics of lecturers in the 21st century; (4) technology and instruction, and study and curriculum development; (5) technology and research; (6) technology and academic services; (7) technology and management of data and knowledge for education; and (8) information technology and communication for education. In evaluating the appropriateness and internal congruence of the outline of the training program, the experts were of the opinion that the outline was appropriate with means ranging from 3.86 to 4.67. The internal congruence of the outline of the training program showed an index of congruence (IOC) ranging from 0.86 to 1.00. The experts held that all components of the outline of the training program were appropriate to the highest level and displayed internal congruence.

4. In evaluating the training program for enhancing the technology competencies of university lecturers, the following was found: The mean scores for the technology competencies of university lecturers in the aspects of knowledge, capabilities, and attitudes after the completion of the program were higher prior to its commencement at the statistically significant level of .05. As shown in the Table 2.

As regard competencies, the following was found: In comparing competency differences regarding the technology knowledge of university lecturers as classified by sub-aspects, it was found that its mean scores on competency in the aspect of technology knowledge overall and in each sub-aspect of administration; information technology and communication; and general knowledge of technology after the completion of the program were higher prior to its commencement at the statistically significant level of 0.05. No differences were found in the sub-aspects of instruction, study and curriculum development; research; and academic services. In comparing competency differences as regard the technology capabilities of university lecturers in respect to sub-aspects, it was found that the mean scores in the aspect of technology capabilities overall and in each sub-aspect of instruction, study and curriculum development; research; academic services; administration; and information technology and communication using

Table 2. Comparison of knowledge, capability, and Attitudes technology competencies of university lecturer before and after training program.

Technology competency	before		after		t	p
	$\overline{X}$	SD	$\overline{X}$	SD		
knowledge	27.89	3.45	39.54	0.79	-17.77*	0.000
capability	3.00	0.79	4.15	0.33	-8.19*	0.000
Attitudes	3.98	0.65	4.63	0.30	-5.39*	0.000

*p < 0.05.

Table 3. Means and standard deviation of the opinion regarding the level of appropriateness of the use of the training program.

Appropriate	$\overline{X}$	SD	opinion level
1. Training unit contents	4.35	0.55	high
2. Instruction and study activities	4.34	0.60	high
3. Training media	4.44	0.56	high
4. Measurement and evaluation	4.22	0.64	high
5. Others	4.36	0.57	high
Total	4.34	0.54	high

technology after the completion of the training program were higher prior to its commencement at the statistically significant level of 0.05. In comparing competency differences in the aspect of the technology attitudes of university lecturers in respect to sub-aspects, it was found that the mean scores for the competency in the aspect of the technology attitudes overall and in each sub-aspect of instruction and study and curriculum development; research; academic services; administration; and information technology and technology communication after the completion of the training program were higher prior to its commencement at the statistically significant level of 0.05.

5. In evaluating the appropriateness of the program from the point of view of the lecturers enrolled in the program, it was found that the opinions of the lecturers were evinced overall at a high level. When considered in each aspect, it was found to be evaluated at a high level in the following descending order: training media; other; training unit contents; instruction and study activities; and measurement and evaluation. This is shown in Table 3.

6. Major recommendations offered by training program participants after the completion of the program are as follows: Training Unit 1 dealing with the knowledge and characteristics of technology competencies was not allotted sufficient time. In the opinion of the trainees, instruction for Unit 1 should be extended by one to two days. The time period for training in the program was continuous without breaks and its long duration affected instruction and study. If possible, the training should be held during semester breaks or the training should be continuous until the completion of the program.

During the workshop training using computers and the internet, signals were not constant. Signals frequently failed with the result that training was slow paced in some cases. The Learning Management System (LMS) used the Modular Object- Oriented Dynamic Learning Environment (MOODLE) electronic operational system on the Internet (<www.e-Trainingvec.go.th/moodle>). When the training ended, the system could no longer be used. Regarding Internet signals, some participants did not have user names and passwords. Accordingly, organizers should prepare in advance so that all participants will be able to use the internet at RU.

DISCUSSION

1. The components of the technology competencies of university lecturers were threefold: Component One: Competencies in technology knowledge consisted of five aspects that could be explained through the use of fifteen variables. The competencies were weighted between ranges of 0.427 to 0.792. The variables with the highest loading factors in knowledge of management technology is an item involving knowledge in using technology as a collaborative computing tool exemplified by the use of groupware, Lotus Notes and placeware. Next in

descending order was the knowledge of lecturers with a variety of missions. Therefore, using technology to support collaborative work will make it more convenient to work with computers as supporting tools in work. Programs for group work should be used as in teleconferencing and composing contents together using Wiki. This finding is in consonance with the conceptual framework of Premchaisawat (2008, pp. 101-102) and NaSongkhla (2010, pp. 2-3), introducing that collaborative work technology involves the collaborative work of two persons or more using computers. In addition, groupware technology supports teamwork and allows personnel to express opinions and record learning without the limitation that users do not have to be in the same place at the same time. Though, there are web applications on browsers these days. Networks assist in collaborative work with other people using internet network involving basic work sets such as office, composing contents together or the online encyclopedia, Wikipedia, besides using web chat, web mail and web blog. This finding is in consonance with the research of Pechting (2004) on "Desired Competencies of Social Sciences Instructors in Using Information and Communications Technology in State Institutions of Higher Education." It was found that the desirable competencies of lecturers in the social sciences are knowledge and skills in the use of e-mail; knowledge and skills in the use of training programs on chat via networking; and knowledge in communication using computers and the Internet.

Component Two: Competencies in technology capabilities consisted of five aspects that could be explained through the use of thirty-seven variables. The competencies were weighted in a range from 0.436 to 0.755. The variable with the highest factor loading was the capability of being able to access international knowledge databases at the digital libraries of domestic and foreign universities (0.755). Next in descending order was the capability of being able to use technology to access reliable research databases such as journal databases accepted by the Office of the Higher Education Commission (OHEC), the Office for National Education Standards and Quality Assessment (ONESQA), and the Thailand Research Fund (TRF) (0.744). In conducting research, lecturers must be able to retrieve data from both domestic and international resources from reliable university digital libraries to support their research activities. This finding is in accordance with the conceptual framework of Malithong (2005, pp. 245-247), introducing the use of the internet to retrieve information from sources all over the world. Lecturers can conduct research in subjects of interest for instruction to and study. Resources can be retrieved using search programs to search for information on the World Wide Web network. Websites are classified for search convenience. Host computers in libraries can also be accessed to search for lists of interesting books as well. This is in accordance with the research carried out by Cruthaka (2012) on the "Desirable Research Competencies of University Lecturers." It was found that a desirable research competency of university lecturers was being capable of using technology for the retrieval of data from research databases.

Component Three: Attitudes toward technology could be explained by seventeen variables. The competencies were weighted in a range from 0.518 to 0.798. The variable with the highest factor loading was the perception of modern technology by reference to situational change (0.798). Next in descending order was being consistently interested in following up on advances in technology (0.797). Technology competencies can be variously employed. They facilitate the work of lecturers in instruction and study, media development instruction, presentation, teleconferencing, distance learning, and collecting data from public space in the Internet. Software programs can also be used for writing, printing, or graphics. Technology can be used in providing resources for the storage of knowledge and for retrieving knowledge use in making decisions concerning performance and administration. Lecturers must then follow up and perceive changes-particularly technological changes-in order to maximize the use of technology. This finding is in accordance with the conceptual framework of Niess et al. (2008, p.7), introducing that to prepare for teaching in the 21st century, a well-developed knowledge of technology is needed. This knowledge includes proficient use of technology that is more than using electronic e-mail or accessing the Internet. This knowledge includes an understanding of social, ethical, and human issues related to technology. This knowledge includes the use of technology as production, communication, research, and as a problem-solving and decision-making tool. By integrating them with internet capabilities, the possibilities are extended. In addition, plenty of different technologies and technology applications are available for the various content areas. This result is in agreement with the research of Preeprem (2011) on "Information Technology Competency and Management Information System of Administrator under Jurisdiction Nakhonpathom Primary Educational Service Area Office 1." It was found that administrators are now opening to modern information and communications technology in different ways, and the benefits of information technology to management. This is also in consonance with the research of Pechting (2004) on "Desired Competencies of Social Sciences Instructors in Using Information and Communications Technology in State Institutions of Higher Education." It was found that the desirable competencies of lecturers in the social sciences are interested in following the progress of technology and committed to the use of computers in teaching.

2. In evaluating the appropriateness and internal

congruence of the outline for the training program, it was found that the opinion of the experts, all components of the outline of the training program were appropriate with means ranging from 3.86 to 4.67. The outline of the training program showed an index of congruence (IOC) ranging from 0.86 to 1.00. In the view of the experts, all components of the outline of the training program were appropriate at the highest level in addition to displaying internal congruence. The researchers designed the curriculum on the basis of the factor analysis of a synthesis of the opinions of the experts in addition to incorporating the results of surveying the opinions of lecturers. The upshot was that this process indicated what technology competencies were needed. Then, applying germane concepts of curriculum development, the researchers designed a training program. Contents were determined on the basis of survey results. The curriculum consisted of the conditions of problems and necessities, curriculum objectives, and curriculum components. The curriculum was accordingly compatible with the pattern of curriculum development espoused by Tyler, who stated that curriculum construction and development consisted of objectives, educational experience, participation, and evaluation (Tyler, 1989).

3. In respect to the education provided by the training program, the following was found: The mean scores for the technology competencies of university lecturers in the aspects of knowledge, capabilities, and attitudes after the completion of the program were higher prior to its commencement at the statistically significant level of 0.05. This means that the training program developed by the researchers affected the knowledge, attitudes, and capabilities of these university lecturers. As was previously said, the construction of the training program was based on the factor analysis of the survey results of the necessary technology competencies of university lecturers. As such, the outline of the training program consisted of the conditions of problems and necessities, behavioral objectives, subject contents, activities and training methods, training media, and measurement and evaluation. The focus was on the use of adult learning patterns stressing self-study and actual performance. The knowledge obtained through the program can be adapted to instruction and study and in the retrieval and obtaining knowledge from research. The researchers invited speakers to lecture so as to persuade participants to perform activities using technology in various ways, e.g., in using computers and smartphones as well as applications of computer programs. The technology was used in instruction and study, and in retrieval and analysis of research data. The researchers also constructed a website for knowledge management for university lecturers taking the form of knowledge storage, knowledge retrieval, and knowledge sharing after the completion of the training program. This was consistent with the conceptual framework of Lawson (2009, pp. 29-30), argued that in the design of a training program involving adult learning, one must realize that adults need to learn materials relevant for their work or professional activities. Adults need to integrate their experience with the learning of new things. They prefer hands-on performances rather than learning only concepts and theories. They need to be trained through a variety of training methods. They learn very well in a friendly atmosphere and what they learn should be useful in solving problems at work. This finding is congruent with the research of Cruthaka (2007) on “The training development curriculum for desirable competencies enhancement of chief nurses executive in health care systems perspective.” Cruthaka’s findings shows that the experimental testing of the curriculum for head nurses in the health service system using the one group pretest-posttest design approach showed mean scores for the desirable competencies of head nurses in the future health service system in the aspects of knowledge, attitudes, and capabilities after the completion of the curriculum were higher prior to the experiment at the statistically significant level of 0.05.

4. The university lecturers under study exhibited opinions concerning the level of appropriateness in the use of the training program overall at a high level. When considered in each aspect, it was found to be at a high level in the following descending order: training media; other; contents of training units; instruction and study activities; and measurement and evaluation. The researchers designed the training program such that it had an appropriate instructional plan. Speakers were coordinated such that instruction was efficient. Learning activities was selected and training was conducted appropriately. The training was conducted by reference to behavioral objectives. Documents, equipment, and locations for the training accommodated the learning process. Lessons could be reviewed for self-study via the knowledge management website for university lecturers as a result of integrating a variety of learning activities. The upshot was that the trainees learned and were satisfied. This result reflects the work of Lawson (2009, p. 122, p. 184) as seen in his summary of the learning rules of the progressive training method advocated by Silberman and Walter. The latter claimed that the presentation of activities using sound alone in narration will not allow retention by participants. Auditory and visual presentations alone allow only diminished retention. However, questioning leads to understanding. Relying on auditory and visual presentation along with explanations and performance will augment the absorption of knowledge and the honing of skills. Using the knowledge thus acquired, the teaching of others leads to one becoming an expert himself or herself. At least 80% of learning and good retention results from the combination of auditory

and visual presentation coupled with actual performance.

CONCLUSIONS AND RECOMMENDATION

The results suggest that providing lecturers with the appropriate training should help increase their technology competencies. The recommendations are that:

1. In developing a training program, a study must be made of what model would be appropriate. The training program must be evaluated to foster understanding and to develop the training program such that it is reflective of the program development process. This will affect the efficiency of the training program in addition to ensuring output matches the needs of participants and society.

2. Prior to the use of the training program, the components of the program should be studied in the aspects of learning objectives, scope of contents, instructional activities, instruction media, and measurement and evaluation. All components should be appropriate to the participants and context. This will lead to better understanding and a clearer overall view of the program which in turn should redound to the benefit of future developers of curricula.

3. Concerning the training of lecturers in technology competencies, universities pay attention to such matters at present. If it is necessary to organize training in terms of programs, universities should encourage participants to assess themselves and determine their learning needs by reference to training topics and then register. Universities should provide support for registration fees for the program. Organizers should conduct public relations in various channels, viz., through government circular, project, public relations, and website public relations. The organizing committees should take care of the registration system.

4. The concepts and principles used in organizing the training must be clearly determined and in consonance with the objectives of the curriculum as well as appropriate to the target group to be trained. Apposite concepts and principles should determine the planning of instruction and study throughout the period of the program.

5. The period of time spent in the training should be responsive to the needs of the target groups. The characteristics of target groups, program contents, and training methods and activities should be studied. This will ensure that the program is concise, reduces expenses and conducive for efficient training.

Conflict of interest

The authors have not declared any conflict of interest.

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REFERENCES

Armstrong DG (1989). Developing and documenting the curriculum. London: Allyn and Bacon.

Cruthaka S (2007). The training development curriculum for desirable competencies enhancement of chief nurses executive in health care systems perspective. A research copyrighted by faculty of Human Resource Development, Ramkhamhaeng University.

Cruthaka C (2012). Desirable research competencies of university lecturers. Ramkhamheng Res. J. 15:21-37.

Cruthaka C (2013). A Study of international competencies of Ramkhamhaeng University lecturers for ASEAN Socio-Cultural Community readiness. A research copyrighted by faculty of Human Resource Development, Ramkhamhaeng University.

Kwanmuang S (2005). Factors affecting research productivity of faculty members in government universities: LISREL and neural network analyses. Disertation Faculty of education Chulalongkorn University.

Lawson K (2009). The trainer's handbook (3rd update ed.).United States of America: Pfeiffer.

Malithong K (2005). Technological and communication for education. Bangkok: Aroonkarnpim Ltd.

NaSongkhla C (2010). Design of web-based instruction in E-learning system.Bangkok: Chulalongkorn University Printing House.

Niess M, Lee J, Kajder S (2008). Guiding learning with technology. United States of America: Jone Wiley & Sons.

Noe RA (2013). Employee training and development (6th ed.). New York: McGraw Hill.

Oliva PF (1992). Developing the curriculum (3rd ed.). New York: Harper Collins.

Ornstein AG, Hunkins FP (2004). Curriculum foundations, principles, and issuses. New York: Pearson Education.

Pahe S (2010). Teacher development in strategic education reform in the second decade. Retrieved July 22, 2014, from http://www.addkutec3.com/wp-content/uploads/2011/11/developkru.pdf

Pechting N (2004). Desired competencies of social sciences instructors in using information and communications technology in State Institutions of Higher Education. Thesis field of study audio-visual communication Chulalongkorn University.

Preeprem K (2011). Information technology competency and management information system of administrator under jurisdiction Nakhonpathom Primary Educational Service Area Office 1. Thesis education administration Silpakorn University.

Premchaisawat W (2008). Management information system. Bangkok: Technology Promotion Association (Thai-Japan).

Raob I, Al-Oshaibat H, Ong SL (2012). A factor analysis of teacher competency in technology. New Horizons Edu. 60(1):13-22.

Saylor JG, Alexander WM, Lewis AJ (1981). Curriculum planning for better teaching and learning. New York: Holt, Rinehart & Winston.

Tyler RW (1989). Basic principle of curriculum an instruction. Chicago: University of Chicago Press.

The Policy and Planning Office of the Permanent Secretary, Ministry of Education (2013). Master plan of Information and communication

technology for education, Ministry of Education 2011-2013. Retrieved Aprill 13, 2014, from http://www.sea12.go.th/ict/ ict_plan/ict_moe.pdf

UNESCO and Microsoft. (2011). UNESCO ICT competency framework for teachers. France: United Nations Educational.