

IMPACT STUDY OF DIGITAL CLASS TRAINING IN INDONESIA

^{1,2}Hari Wibawanto

¹hariwibawanto@mail.unnes.ac.id

²Gedung E-11 Kampus Sekaran
Universitas Negeri Semarang

Abstrak. SEAMOLEC has been conducting training on the utilization of ICT (Information and Communication Technology) for teachers since 2015. The program that aims to make teachers more familiar with the ICT tool was inline with the efforts of ASEAN countries to adopt the 21st century curriculum for strengthening ICT literacy. In those training program, SEAMOLEC trains teachers to utilize ICTs in teaching and learning activities. To know the impact of the training program, SEAMOLEC conducted this research.

Subjects in this study were participants of Digital Class Training. The online questionnaire was sent to 1454 respondents. A total of 268 respondents responded and fill out the questionnaire..

The results of the study are: (1) based on teachers opinion, training materials are good and instructors have a high capability for

conducting the training, (2) most schools support ICT-based learning activities by providing some facilitation, such as infrastructures and policies, (3) teachers utilizing ICTs in the teaching and learning activities and developing further ICT skills; (4) the majority of teachers disseminate skills to their peers in various ways, and the training have some positive impacts on their careers.

Based on the results of the study, it is suggested that: (1) SEAMOLEC should provides the repository for training and video recordings materials to be be use as open source for teachers; (2) SEAMOLEC needs to conduct a learning innovation contest that utilized ICTs as learning tool and, if necessary, in collaboration with the provincial education offices.

Keywords: *learning activity, 21st century learning, digital literacy, Digital Class Training, ICT.*

1 Introduction

Technology is an important tool in assisting various human activities, including teaching and learning activities. In the educational context, technology assisting and strengthens the relationships between educators and learners, discovering new ways of

learning and collaborating, and bringing the learning experience closer to the learners.

Schools and other educational institutions are incubators for exploration of new knowledge and discoveries. Educators serve as learning collaborators for learners in exploring new knowledge and for learners in continuously adding new skills. Meanwhile, the school leaders need to support teachers for creating the student learning experience by providing tools and supporting regulation.

Technology has long been integrated into education in general, and in learning in particular. Utilization of ICT (Information and Communication Technology) as a learning tool can improve the quality of students, and become a new way to collect, manage, and interpret information. ICT is also used as a tool to communicate synchronously or asynchronously, automating tests and quizzes, and presenting multimedia learning materials 24 hours a day and 7 days a week.

Learning, especially what so-called formal learning, is a process that involves 3 interrelated activities, i.e. presentation, communication, and evaluation

activities (Wibawanto, 2012). In the face-to-face learning mode, the presentation of learning materials usually involves lecturing or discussing learning materials held in a verbal, written, or combined of both. Teaching media are often used to clarify information or improve students' understanding. Meanwhile, the interaction between teacher and students or between students can occur simultaneously during the presentation activities, or together in the form of question and answer. Also, evaluation activities can take place simultaneously with presentation and interaction activities, or performed separately. In virtual learning, presentation, interaction, and evaluation activities occur by utilizing learning management system. Both face-to-face and virtual learning can utilize ICTs to improve the achievement of learning goals (Wibawanto, 2017).

Today, ICT has become one of the key technologies in 21st century learning. Saavedra and Opfer (2012) state that there are 9 things that can be done to teach 21st-century skills, namely: (1) Making the learned skill relevant to student life needs, (2) Teach through the disciplines, (3) Develop thinking skill, (4) Encourage learning transfer, (5) Teach students how to learn. (6) Address misunderstandings directly, (7)

Treat teamwork like an outcome, (8) Exploit technology to support learning, and (9) Foster creativity.

Instead of an understanding of certain content, what is considering more important is the ability to perform data analysis and interpretation as well as general knowledge such as the ability to work in teams and the ability to communicate fluently both verbally and in writing. Scholars argue that in the 21st century, the essential skills that must be possessed are: adaptability, social/communication skills, problem-solving skills, self-development and self-management, and system thinking (Wibawanto, 2017).

At the 48th SEAMEO Council Conference in 2015, SEAMEO agreed on the seven priority areas of SEAMEO on education (SEAMEO, 2016):

- 1) achieving universal education for early childhood;
- 2) addressing barriers to inclusion;
- 3) resilience in the face of emergency;
- 4) promoting vocational and vocational education, and training;
- 5) revitalization teacher education;
- 6) promoting harmonization in higher education and research; and

7) adopting the 21st century curriculum.

The Framework for 21st Century Learning recommends the use of technology into the acquisition of learning and innovation skills, which focus on creativity, critical thinking, communication, and collaboration. Information literacy, media literacy, and information and communications technology literacy have an important emphasis on preparing 21st-century generations. Information literacy requires the ability to access information efficiently, critically evaluate, and use creatively to solve problems. Media literacy focuses on constructing and interpreting media messages and understanding how media can affect people's beliefs and behaviors. ICT literacy focuses on the utilization of digital technology, communication devices, and computer networks to access, manage, integrate, evaluate and create information (Thieman, 2008).

In 2006, ISTE (International Society for Technology in Education) held a panel discussion involving educators and technology experts to review technology standards for students utilization in their learning. The results include, among others, the use of technology as a tool for research, communication, collaboration, problem solving and decision-making

which are all essential skills as citizens and members of the community. The standard identifies six core components (Thieman, 2008), namely:

- 1) Creativity and Innovation. Students demonstrate creative thinking, construct knowledge, and develop innovative products and processes using technology..
- 2) Communication and Collaboration. Students use digital media and environments to communicate and work collaboratively, including at a distance, to support individual learning and contribute to the learning of others
- 3) Research and Information Fluency. Students apply digital tools to gather, evaluate, and use information.
- 4) Critical Thinking, Problem-Solving and Decision-Making. Students use critical thinking skills to plan and conduct research, manage projects, solve problems and make informed decisions using appropriate digital tools and resources.
- 5) Digital Citizenship. Students understand human, cultural, and societal issues related to technology and practice legal and ethical behavior.
- 6) Technology Operations and Concepts. Students demonstrate a sound

understanding of technology concepts,
systems and operations

Studies in the UK with regard to ICT integration found that successful ICT implementation in schools depends on the effectiveness of teacher training in general knowledge and particularly in the field of ICT (Daly, Patchler, & Pelletier, 2009). Based on reviews of literature on continuous professional training published between 2006-2008, they recommend: (1) the training approach should be collaborative by giving trainees sufficient time to discuss, reflect critically, and plan the follow-up together, (2) there should be support of facilities and infrastructure for the sake of sustainability training skill (explicitly stated in this report is the need for access to laptops for home use for every teacher), and (3) the need for policy support from the school leaders.

So far, the preparation of prospective teachers to utilize ICT in learning is not done systematically and integrated, even in developed countries like the United States (Franklin, 2007). BERMUTU (The Better Education and Reformed Management for Universal Teachers Up-grading) program, organized by the Ministry of National Education of the Republic of Indonesia in the first decade of the 21st century,

integrates ICT skills in training for the improvement of basic education teacher competencies. This program does not reach all teachers, and training materials are not just ICT but also other aspects of teaching skills such as a lesson study and classroom action research.

Formally, Pustekkom (Center for Information and Communication Technology Education and Culture) is tasked to carry out the development and utilization of ICT for education. Various products and services related to ICT are organized by Pustekkom, among others: National Education Network, Home Learning, Education Television. Although Pustekkom has nationwide coverage, the implementation of ICT training for teachers is generally carried out by provincial implementing units (e.g. Balai Pengembangan Teknologi Informasi dan Komunikasi Pendidikan in Jawa Tengah and Tekkomdik in Yogyakarta). In relation to the elimination of ICT subjects in the 2013 curriculum, ICT training for teachers in subsequent years is carried out in an integrated manner with the training of teachers' knowledge and skills updating for various subject areas.

This study was conducted to identify the impact of the implementation of the digital classroom training, including: (1) the quality of training held by SEAMOLEC, (2) environmental support for the implementation of ICT skills in teaching and learning, (3) utilization of training programs, (4) follow-up of training programs.

2 Research Method

Subjects in this study are all of various training participants held by SEAMOLEC which is generically referred to as Digital Class Training (Digital Class Training). The online survey form are sent to all of the training alumni. They are required to fill the survey in a certain period of time.

The research instruments were developed to collect information on: (1) support of infrastructure in schools/workplaces, (2) support in the form of school/workplace leadership policies, (3) utilization of skills obtained by SEAMOLEC training alumni in carrying out teaching and learning activities, 4) self-development of skills other than obtained from SEAMOLEC training program, (5) learning innovation by SEAMOLEC training alumni, (6) improvement of SEAMOLEC training alumni career, (7) improvement

of student achievement, and (8) dissemination of knowledge and skills from SEAMOLEC training alumni to their peers.

Data was retrieved using an online questionnaire and analyzed descriptively. There are 278 out of the 1454 respondents that fill the questionnaire completely, 10 email accounts of which filled twice so that the valid respondents was 268. The analysis was done descriptively by describing the facts revealed from the data obtained.

3 Result and Discussion

3.1 The Quality of Training Organized by SEAMOLEC

In addition to collecting information on the impact of ICT skills training, this research is also intended to obtain training participants feedback on SEAMOLEC training quality. Although after the end of the training program was always followed by program evaluation based on the trainee's responses, this research should also reveal the quality of the training from the point of view of the training alumni. There were several components asked related to the quality of the training: (1) the duration of the training, (2) abundance of training materials, (3) the training facilities, (4) the instructor competencies..

A total of 179 out of 268 respondents (or about 67%) less agree or disagree with the statement that the duration of the training is too long. In contrast, 143 of 268 respondents (about 53.4%) also less agree or disagree with the statement that the duration of the training was too short.

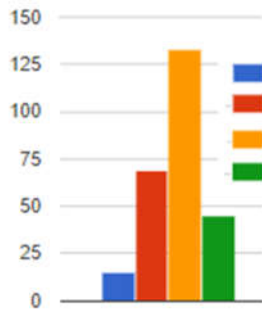


Figure 1. The training duration was too long

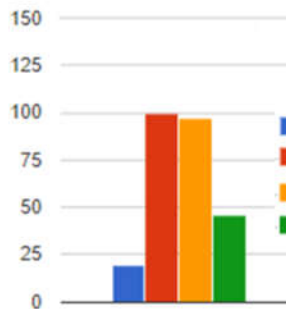


Figure 2. The training duration was too short

Regarding the number of materials for each training program, 199 out of 368 respondents (or approximately 74.3%) less agree or disagree if it is stated that the training material is too much. That is, for most trainees, the training materials was sufficient with the time provided.

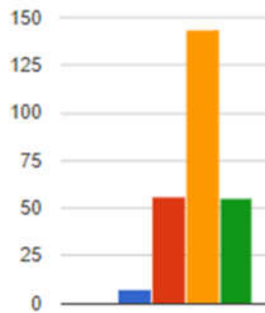


Figure 3. Too many training materials for each program

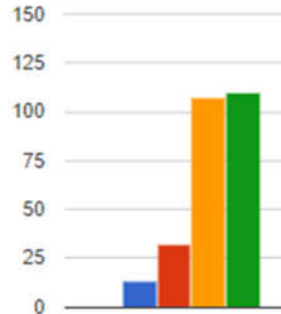
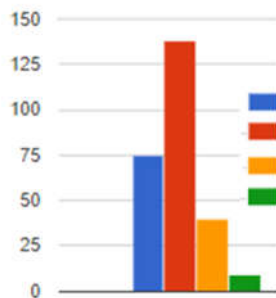


Figure 4. Training materials not relevant with teaching and learning need

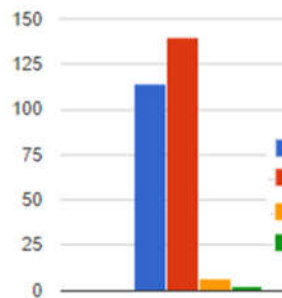
In terms of material relevance trained in learning needs, 217 out of 268 respondents (about 81%) less disagree or disagree with the claim that the training materials were less relevant to the teaching and learning needs. In other words, most trainees assume that the training materials are indeed relevant to the learning needs. Figure 4 shows the relevance of the training materials to the learning needs, where most (about 81%) of the training alumni reject the notion that the training materials are less relevant to the teaching and learning needs.

Regarding the training facilities provided by SEAMOLEC in every training program, the

respondents considered that the training facilities were fully provided. This was reflected in the research findings as shown in Figure 5, where 213 of the 268 respondents (about 79.5%) agree or strongly agree with the statement that the training facilities is complete and fully provided by SEAMOLEC.



Gambar 5. Are training facilities (training kits, learning modules, etc.) complete?



Gambar 6. The instructor/trainer mastered the trained material

Instructors who train certain skills must have the knowledge and skill about training materials and have the ability to train the trainee. In other words, the training instructor needs to have technical skills about the knowledge and skill to be trained, and pedagogical abilities of how the skills are trained.

Based on the research findings as illustrated in Figures 6 and 7, it can be stated that almost all respondents strongly agree or agree that the training instructors are mastered the training materials as well as having the ability teach the training materials. A total of 254 of the 268 (about 95%) of respondents strongly agree or agree with the statement that the instructor mastered the material being trained. The exact same number of respondents also strongly agrees or agrees with the statement that the instructor has the ability to train or teach that skills.

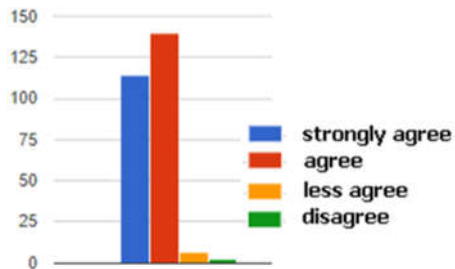


Figure 7. Instructor/trainer has technical competence and pedagogical competence

3.2 Support for Implementation of ICT Skills in Teaching and Learning

Factors that strongly supports the implementation of utilizing ICT in teaching and learning was the availability of infrastructure in school or workplace where the alumni working. A total of 105 respondents strongly agree and 115 respondents out of a total of 268 respondents agree with the statement that the infrastructure in the school or workplace where the alumni working, support the implementation of ICT utilization in teaching and learning.

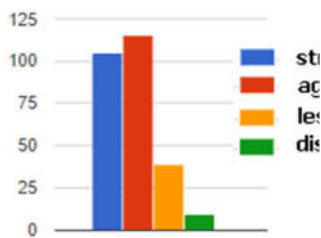


Figure 8. Infrastructure (computers, hotspots, internet access, etc.) in the school or workplace of alumni supports the application of training results

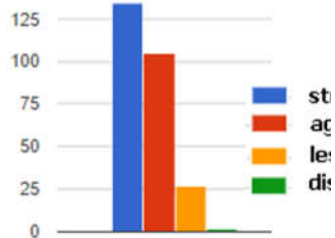


Figure 9. Leaders in the school / workplace alumni support the application of skills gained from the training

In addition to the availability of infrastructure, another support required is the policy of school

leaders. School leaders who are committed to the application of ICT in learning will help and facilitate teachers in implementing ICT for student learning progress.

The results showed that 240 respondents (90%) stated strongly agree and agree that school leaders or alumni workplace leaders support the application of skills acquired alumni with the policies issued. Support of this policy is very important because in addition to motivate alumni, will also provide alumni confidence in innovative ICT-based learning.

3.3 Utilization of training program

The training programs organized by SEAMOLEC are generally aimed at improving the quality of learning by introducing ICT tools that can be used in learning. Of course, thanks to the experience gained during the training, alumni can further develop their knowledge and skills in ICT and can use it for administrative and other activities..

The results showed that 256 respondents (96%) strongly agree and agree to the statement that they apply the skills gained from the training in daily learning activities. A total of 251 respondents (94%) also apply it to administrative activities.

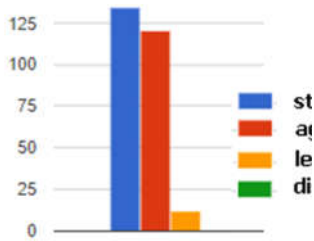


Figure 10. I use the skills I gain from training in learning activities

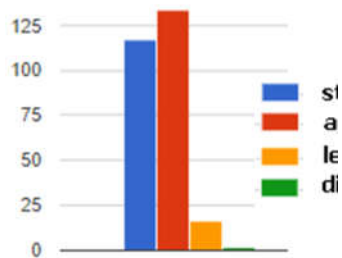


Figure 11. I use the skills I get from training in administrative activities to support my career

Skills training should be inspiring, or at least triggering, participants to develop the skills by themselves so that not all types of ICT skills should be trained. It is therefore desirable to know whether the training alumni also develop ICT skills to support learning activities other than those trained by SEAMOLEC. A total of 260 (97%) training alumni strongly agree and agree with the statement that they are self-studying various ICT skills for teaching and learning, other than those trained by SEAMOLEC. This indicates that ICT training by SEAMOLEC inspires and becomes the trigger for training alumni to learn various ICT skills.

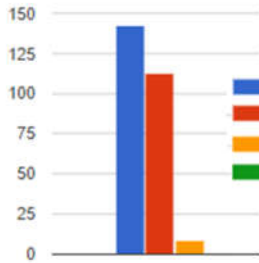


Figure 12. I studied various ICT skills, other than those trained by SEAMOLEC, to support teaching and learning activities

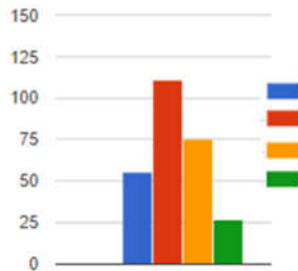


Figure 13. I have written some papers related to the use of ICT in teaching and learning

Since October 2013, based on the Regulation of the State Minister for Administrative and Bureaucratic Reform No. 16 of 2009, teachers wishing to promote are required to have some credit point from scientific publications or innovative works. This obligation must be implemented for teachers who want to stepping up from the rank III/b to III/c and above. The ability to use ICT in teaching and learning can inspire many teachers to write papers or implement innovative learning methods. Therefore, this study also asked the respondents, whether or not they have written papers related to the utilization of ICT in learning. Of the 268 study respondents, 166 agree

or strongly agree that they had written papers related to the use of ICT tools in learning. Meanwhile, 162 respondents agree or strongly agree that they had conducted classroom action research using their ICT skills. Writing papers and conducting classroom action research are two activities that lead to the ownership of credit point from scientific publications and/or innovative works.

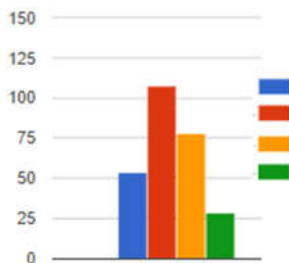


Figure 14. I've done classroom action research using my knowledge and skills in ICT

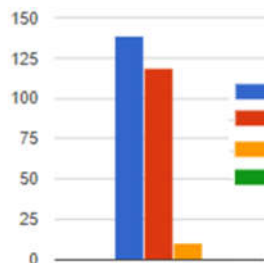


Figure 15. Students have benefited from the application of ICT skills in learning (increasing achievement, increasing motivation, students more active in learning, etc.)

Training teachers in mastering ICT skills were intended to improve teacher performance in teaching, and at the end will increase the student

learning performance. Therefore, ICT skills training is conducted not only for ICT teachers, but also for teachers of all subjects. Improved performance can be reflected directly in the form of increasing scores or grades of student learning achievement, but can also be indirectly in the form of increasing the student learning motivation, student activeness in the class, and so forth. Of the 268 respondents, 258 respondents strongly agree or agree that the ICT skills they have are useful in teaching and learning.

Some activities, for example, utilizing ICT in learning, conducting classroom action research and writing scientific papers on the implementation of ICT in learning, can lead to promotions and rising in positions that have a direct impact on teacher welfare. In an effort to know the impact of the ability to utilize ICT in teaching and learning on promoting teacher career, its found that 181 out of 268 respondents agree or strongly agree that the skill on utilizing ICT that they have can help them on promoting or rising their position.

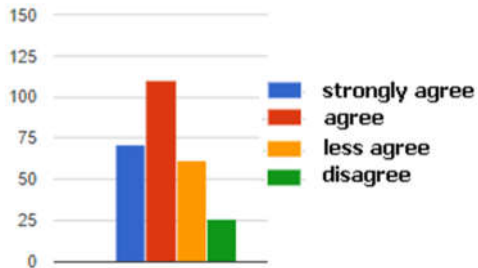


Figure 16. I can get promotion/ position/career, among others, because of the skills of utilizing ICT

3.4 Training Program Follow-up

The number of teachers in Indonesia is too large to be trained by SEAMOLEC alone. Therefore, in every training activity, SEAMOLEC always expects the trainees to disseminate their knowledge and skills to their peers. Of the 268 respondents, 244 respondents or 93.1% stated that they have spread their skills to peers.

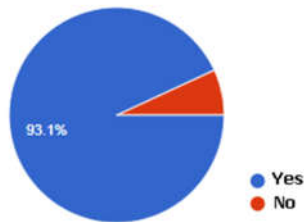


Figure 17. Do you disseminate the skills you have to your peers (fellow teachers)?

There are various ways of skill dissemination to colleagues, directly or indirectly. The direct way can be done by conducting training facilitated by schools or other parties, organizing seminars, or conducting training activities in the Subject-based Teachers' Association (MGMP) meetings and the like, or through the publication of articles on various media. The indirect way is to participate in various competitions that are regularly held by the Dinas Pendidikan at the district, provincial and national levels. There were various competitions held that will be inspiring many other teachers to learn the use of ICT in learning.

Of the 268 respondents, 66.8% disseminating their ICT skills through peer training, 55.3% did in MGMP meetings, 13.9% did in seminars, and 11.9% through article publications. A small percentage of respondents do so in a variety of ways, for example, informally training their peers or even create a

channel on Youtube to publish an ICT utilization tutorial.

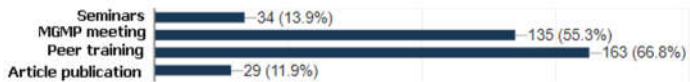


Figure 18. What kind of activities have you ever done to disseminate your skills to your peer?

Participating in learning innovation contest, is another form of dissemination of ICT skills, intended to obtain appreciation in various forms as well as a means of obtaining credit that can be used for promotion and rise the position. Not all teachers are competent, interested or have enough time to join the learning innovation contest. This condition is also reflected in the findings of the research which found that 33.2% or 89 respondents stated that they had participated in various competitions.

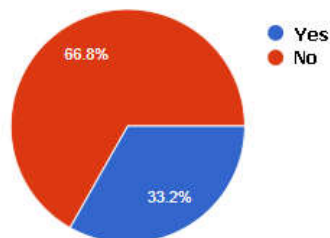


Figure 19. Have you ever joined a learning innovation contest (for example: scientific writing competitions, classroom action research competitions, etc.) based on the skills you acquired?

Interest, ability, time availability is strongly suspected to be the determining factor of whether or not the teacher joins the competition in teaching and learning innovation. This research found the facts that most teachers who claim to have participated in the competition have not only followed one or two types of competitions but up to 6 different types of competitions.

4 Conclusions and Recommendations

4.1 Conclusions

Based on the research findings it can be concluded that:

- 1) The school or institution leader where the teachers work mostly supports ICT-based learning activities by providing facilitation in the form of infrastructure and policy, so that teachers can freely utilize the skills they acquire;
- 2) ICT skill they obtain from training are utilized by teachers in teaching and learning activities

and inspire them to further expand their ICT skills;

- 3) The snowball effect occurs because most trainee teachers disseminate the skills they acquire in various ways. This has resulted in an increasing number of teachers who have ICT skills for learning, also resulting in rising the career of the training participant;
- 4) The trainees considered that the training materials were well chosen and developed and presented by competent instructors who were technically and pedagogically competent.

4.2 Recommendations

Based on the results of the study, it is recommended that:

- 1) To improve the usefulness of the training program, it is recommend that SEAMOLEC should provide the repository of training materials and video recordings to be learned by training alumni as well as teachers or other enthusiasts. This repository could be in in the form of open educational resources that can be freely accessed.
- 2) To stimulate innovative learning activities, SEAMOLEC needs to conduct a learning innovation contest that utilizes ICT. Several provincial education offices held similar

competitions and the participants were very enthusiastic. Where necessary, SEAMOLEC can work in collaboration with the provincial education offices.

5 References

- [1] Wibawanto, H. Pemanfaatan Facebook untuk Pengelolaan Pembelajaran Terpadu. *Diges Pendidik*, 2(12), 37-50 (2012a).
- [2] Wibawanto, H. Teknologi Informasi dan Komunikasi dalam Pembelajaran Sains. *Seminar Nasional Pendidikan IPA 2017 Pascasarjana Universitas Negeri Malang: Pendidikan dan Pembelajaran IPA berbasis Riset dan Teknologi Informasi* (pp. 1-14). Malang: Pascasarjana Universitas Negeri Malang (2017).
- [3] Saavedra & Opfer. *Learning 21st-Century Skills Requires 21st-Century Teaching*. Phi Delta Kappan International, 8-14 (2012).
- [3] Thieman, G. Y. Using Technology as a Tool for Learning and Developing 21st Century Citizenship Skills: An Examination of the NETS and Technology Use by Preservice Teachers With Their K-12 Students . *Contemporary Issues in Technology and Teacher Education*, 342-366 (2008).
- [4] Daly, C., Patchler, N., & Pelletier, C. *Continuing Professional Development in ICT for Teachers: A*

Literature review. London: WLE Centre, Institute of Education, University of London (2009).

- [5] Franklin, C. *Factors that influence elementary teachers use of computers*. *Journal of Technology and Teacher Education*, 267-293 (2007).

Acknowledgement

This research was supported by Research and Development Division of Southeast Asian Ministers of Education Organization (SEAMEO) Regional Open Learning Centre (SEAMOLEC). The author gratefully acknowledge for their cooperation and support.