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Issues Concerning Student Teachers' Perception of ICT Education*

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The purpose of this paper is to describe about the issues concerning student teachers' perceptions of ICT use and obstacles they experience during the teaching. Student teacher experience conflicts with ICT in particular, and lack of confidence in using ICT. Furthermore, pre-service teachers experience various conflicts while teaching during student teaching. Main conflicts student teachers experience are reported that their lack of confidence in using ICT, especially in front of the student body during the class, and firm belief on ICT and its effects. Student teachers lack systematic training during their professional development. As a conclusion, the teacher training programs need to have systematic approach in their curriculum to assist pre-service teachers to use ICT before their student teaching to give them first hand experience in classrooms.

Keywords : student teachers' perception, ICT education

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Successful Integration of ICT

The ICT have changed our classrooms forever. Recently, most of the nations consider integration of ICT and educational reform to improve their educational quality. Many consider ICT as a purpose and a mean to prepare our students ready for the 21st century. Use of ICT in Korean schools is no longer a new kid on the block. Most school teachers have been trained, and are successfully using ICT in their classes. The quantum reap we have experienced during the last 10 years with ICT, our society and the schools are equipped with top technologies leading toward ubiquitous classes. However, the changes in professional development have not been effective nor systematic to balance the call of duty in the classrooms. The courses in pre-service teachers' professional development phases have not been adopted to assist pre-service teachers to adapt and prepare for today's classrooms.

A successful integration of ICT in classrooms requires certain factors such as ICT infrastructures, and teachers' abilities to use ICT. We argue that the preparation for teachers' use of ICT is most critical, and necessary infrastructures and improvement in instructional materials are the three factors influencing the quality of learning with ICT (Ahn, Cho, & Song, 2002).

The teachers' teaching and students' learning also have been changed since last 10 years. Most of the teachers and students cannot think of teaching or even learning without ICT. For efficiency and for effectiveness, teachers use ICT. Students use ICT for the same reason. Furthermore, they are accustomed and need to receive information through multimedia. Teachers have been trained to use ICT in classes; however, pre-service teachers have not been trained enough for effective use of ICT to teach in classes. In spite of growing demands and guidelines issued for teaching with ICT in pre-service teachers' curriculums, however, we lack changes and lack research to implement effective training programs for pre-service teachers (Ahn, Cho, & Song, 2002, Lim, 2006).

Background on ICT for Profession Training

Korea, like many other countries, has developed plans to intensify their investments, and the Ministry of Education developed policies to expand the use of ICT in schools. It is fair to say that we have experienced explosive use of Internet and WWW has pushed the adaptation of ICT in all school levels. Like many of the reports on computers and education, ICT in education is an area which is in turmoil because it involves many participants play a different role.

In general, the classroom learning activities and achievements are a result of interactions. ICT is an essential part of all curriculum (Okamoto, 1999), however, the use of ICT should be a tool in achieving the learning objectives, not a sole activity in the classroom (Coughlin & Lemke, 1999). The effective and the quality of learning experiences using ICT depend on the positive mindset of the teachers, teachers' attitude and their level of abilities to use ICT (Russell, Finger, & Russell, 2000; Sandholtz, Ringstaff, & Dwyer, 1997; Soh & Chun, 1999). Identification of teacher's level of competency in using ICT is a prerequisite for future professional development (MOE, 2000a, 2000b; Morrison, Lowther, & Meulle, 1999; Russell, Finger & Russell, 2000; Wolfson & Willinsky, 1998).

Some research reports that there seems to have no differences in negative teachers and positive ones toward ICT use. However, the learning outcomes showed a difference between negative teachers and positive ones. The negative teachers placed the value of the ICT as a useful tool in making teachers work easier while positively-inclined teachers placed the value of the system as a tool to systematically organizing, critiquing and evaluating ideas to support higher-level cognitive frameworks (Ahn, 2004, Becker, 1994; Bradley & Russell, 1997, MOE, 2001, Wiburg, 1997). We need to identify the key factors tribute to successful integration of ICT to expand to a broader spectrum of schools and courses (Ahn, 2002, Ahn, Cho, & Song, 2002). This success factors, however, need to include pre-service teachers.

Research reported on teachers' negative side on the use of ICT was heavily influenced by the level of their competency (Hardy, 1998, Hong, Han, Kim, Song, 2001). Teachers who lack skills to use different ICT functions and media was stressed with fear of technology. Some teachers use mainly PPT files or materials developed by commercially developed teaching materials that may not fit with the class or the students. Most of our teaching materials do not let the teachers change or revise some of the contents. Teachers could not edit to use or does not wish to edit to fit the materials into the class. This leads teachers to click only as a page turner. Some teachers even thought ICT as a time to rest for the teacher. These perceptions and the attitudes could be detrimental for students'perception on the ICT for misuse.

ICT training for Pre-service Teachers

Lim (2006) reported on the use of ICT and developed ICT educational model for pre-service teachers. As he reported, there are many in-service teacher training programs and models have been researched, however, pre-service teacher training models lack systematic approaches. A research on five different stakeholders'role in implementation of ICT in school Ahn, Cho, & Song (2002) stresses the critical role plays such as teachers and principals. Lee, 2007 Lim (2006) and Eom & Kim (2006) reported about the lack of pre-service teachers' programs for efficient and effective use of ICT for student teaching.

According to Pelgrum (2001) forces that operate on the micro- and eso-level of the education system that is at schools and in classrooms level. It may be influential in bringing about changes that are beyond the direct control of Ministries of Education. Therefore, it is "important for educational decision makers to periodically assess the actual situation of ICT in educational practice." And, that includes the situations for pre-service teachers that have been overlooked by

Korean Ministry of Education. MOE failed to bring about the changes in our professional development programs during the last 10 years.

Education in information society differs from industries society (Pelgrum, ten Brummelhuis, Collis, Plomp, Janssen Reinen, 1997). In the Information Society, teachers helps students find appropriate instructional path with guiding students for independent learning, thus helping students to evaluate own progress. In this society, teachers focus on communication skills where industrial society emphasizes teacher oriented instruction and student evaluation within a large class setting. Students, however, are more active, good at teamwork, active in questioning and participating with high interests in learning in or outside of school. There are reports that teachers and staff development is crucial factor in successful adaptation of ICT in education (Janssen Reinen, 1996, Ahn, Cho, and Song, 2002), and this must include student teachers. Pelgrum (2001) listed 7 areas to be covered as ICT staff development.

- Application of software to track student progress
- Didactical and organizational integration of computers in subjects
- Use of specific programs for subjects
- Evaluation and selection of instructional software
- Use of computers for individualized learning programs
- The use of multimedia application
- Adaptation of software to fit school purposes

This list of areas could contribute and used to develop ICT curriculum for pre-service teachers.

The research based on PT3 (Preparing Tomorrow's Teachers to Use Technology Program, US Ministry of Education, 2004), Lim suggested five design principles could be developed for new ICT pre-service teacher programs (2006, p. 169).

- Using extent instructional resources for utilizing ICT
- Providing analysis and reflective opportunities about instructional practices

- Having linkage in support ICT use between university and school
- Ensuring a continuous support system
- Providing a Web-based support system

His research reported effective aspects of the principles of the programs as "Having the chances to demonstrate and reflect on the ICT-based instruction, Providing web-based support system, Having direct feedback from the school teachers.(p. 169)" In addition, pre-service teachers identified areas of improvements as "direct feedback in the classroom by faculty let along the on-line feedback regarding ICT-based instruction, detailed overview of the purpose, procedures, and expectation of the program in for the participants, diverse and in-depth introduction of theories, models and cases of CIT-based instruction, and prerequisite course for ICT-based instruction."

Pre-service teachers are trained through professional develop programs, and experience first hand teaching during student teaching visits to schools. During student teaching, pre-service teachers experience many conflicts due to the differences between theory and practice. These conflicts include differences between what they learnt and the actual reality of the classes, differences they learn about the students, teachers, curriculum, and lack of confident use of ICT (Ahn & Cho, 2005). These could have many reasons. It could be from lack of experiences in real school settings and lack of training about teaching. According to Connelly 와 Clandinin(2000), teachers need two types of knowledge: knowledge for teacher and teacher knowledge. Knowledge for teacher is about teaching that needs to be trained through out their professional training process. The teacher knowledge starts from the practical knowledge and belief that the teacher bring into teaching. Therefore, it is vital to support with programs for pre-service teachers to experience various teaching methods and classroom settings based on individual level of theory and beliefs (Killion & Todnem, 1991).

Conflicts in pre-service teachers could provide a chance to reflect on one's

actions and allow different ways to resolve conflicts. O'Loughlin (1992) suggested that pre-service teachers need to understand and be able to reflect about classroom in order to resolve conflicts individually. Pre-service teachers can learn to resolve conflicts by "reflective teaching" (O'Loughlin, 1992), and they can be taught through seminar, Action Research, and writing journals (Yost, Sentner & Forlenza-Bailey, 2000).

Reflecting on ICT Implementations

US Ministry of Education implemented project called PT3(Preparing Tomorrow's Teachers to Use Technology Program). PT3 is a project focus on teachers' use of technologies in schools. In order to resolve such problems, various research projects have started: training for faculties of college of education, restructuring curriculum, on-line teacher training, on-line community, video case-based instruction, mentoring, and evaluation. Based on Ertmer (2003)'s research, Lim (2006) lists a few issues that we have not been considering. Korea MOE has been focusing implementation of ICT in schools and provided means to be effective and efficient in schools. However, the ICT policy skewed to one side – toward schools. It lacked supports nor guidelines for faculty in neither College of Education nor curriculum for pre-service teachers.

One of the reasons for fast diffusion of ICT in Korean schools, it was the external pressure-government policies and funding. However, successful integration of ICT depends heavily on teachers' belief and attitude toward using ICT in classes. In order to fully take advantage of return on investment in ICT, teachers' attitude and belief should be checked. Researches reported teachers' belief has impact on the use of ICT. Only by the teachers with positive attitude and belief will lead effective and efficient use digital contents and ICT.

Teachers' Perception of ICT Integration

In order for a teacher to use ICT effectively, one need to feel comfortable in using ICT, moreover, one need to be able to create new knowledge with it. However, in reality, teachers lack positive attitude towards Teaching with ICT and did not feel the need of ICT(Sug-Hyun Ryu, Yong-Suk Choi, & Mi-Lee Ahn, 2001- Study on Problems in Teaching with ICT and Plans for Activating It - from school teachers). Teachers using ICT could experience extra burden to learn and to integrate ICT into curriculum. Some first adopters use ICT and quickly change their teaching strategies compared to final adopters of technology.

Often the teachers considered that their students would achieve higher academic ability through school innovation with ICT. These teachers felt that their role and responsibilities in the integration efforts as critical.

Naturally, as the access to computer increased, so did their abilities in using them. The students preferred the learning with the technology to the instructor-led directed learning. As a result of using the technology in the classrooms, the students' pride and ownership about their school increased dramatically.

Teachers' level of ICT skills and attitudes show different level of ICT use in student assignments. Many teachers seem to use basic skills (word processing, WWW, PowerPoint, etc) most often, and consider these as irrelevant for teaching. In addition, most assignments required by the teachers have focused on the use of word processor, send email, information search, and use of PowerPoints. These lack integration of information and problem solving skills. Research reported teachers' level and attitude on ICT, and student homework assignment types seem to have very strong ties (Ahn, 2004). The main reasons for the lack of the system usage in higher thinking skills are: 1) the system implementation is relatively new; 2) the teachers' technical skills gained is only based on the training that were provided; and 3) more time is needed for teachers to accumulate skills that would utilize the system more effectively and efficiently.

Summery and Discussions

Since the ICT implementation was taking place with the unfavorable conditions in Korea, 10 years ago, it has changed many aspects of teaching and learning. To continue the successful school improvement through the ICT implementation, however, more organized support and curriculum should be implemented in the professional development level: faculties and preservice teachers in college of education.

We need courses to teach how to integrate ICT in all subject courses, developing and using ICT in teaching method class, and programs that will provide pre-service teachers more opportunities to be in the reality of the schools, and flexible curriculum changes in universities and college to adopt or change courses when necessary.

Furthermore, in order for ICT to be more effective, pre-service teachers should be required to take a course on ICT in subject area. They also need to learn to develop multimedia contents to understand the process of instructional materials. Teachers do not need to be technical experts but need to understand the basics for software development for digital materials. In addition, pre-service teachers can be confident and effective user of ICT to teach in class and self-regulate their own learning.

References

Ahn, M. L. (2002). Elementary School Stakeholders' Understanding of ICT Integration and their roles - Case study of teachers, students, principle, leader teacher, and parents. Journal of Korea Association of Educational Information & Broadcasting, 8(4), 200-217.

Ahn, M. L., Cho, E., & Song, J., (2002). Success factors on the impact of ICT on learning. Journal of Korea Association of Educational Information & Broadcasting, 8(3), 219-235.

Ahn, M. L., & Cho, E. (2005). Student teachers conflicts during student teaching, Korean Education.

Becker, H.J. (1994). How exemplary computer-using teachers differ from other teachers, Journal of research on computing in education, 26(3), 1-10.

Bradley, G. & Russell, G. (1997). Computer experience, school support and computer anxieties, Educational Psychology, 17, 267-284.

Coughlin, E.C., & Lemke, C. (1999). Professional competency continuum. Professional Skills for the Digital Age Classroom [on-line]. Availiable at: http://www.mff.org/pubs/ME159.pdf

Eom, W. & Kim, K. (2006). Analysis on teacher's individual characteristics affecting ICT use in elementary classroom teaching. The Journal of Educational Information and Media, 12(1).

Hardy, V. H. (1998). Teacher attitudes toward and knowledge of computer technology, Computers in Schools, 14(3/4), 119-136.

Hong, J. Y., Han, B.R., Kim, H. R., Song, K. S. (2001). A study on the information subject curriculum considering ICT using education. The Journal of Korean Association of Computer Education, 4(2), 145-155.

Killion, J. P., & Todnem, G. R. (1991). A process for personal theory building. *Educational Leadership*, 48(6), 14-16.

Lim, C. (2006). A model of educational program for preparing pre-service teachers

to integrate ICT in the classroom teaching. Journal of Educational Technology, 22(4). 137-169.

Ministry of Education (2001). Operational Guidelines to use ICT in Elementary and Secondary Schools.

Ministry of Education (Press Release, 2000). MOE plans to require computers from the first grade"

Morrison, G. R., Lowther, D. L., & Meulle, L. (1999). Integrating computer technology into the classroom, New York: Prentice-Hall, Inc.

Okamoto, T. (1999). The introduction and its meanings of new curriculum for information technology - education from primary to senior high school in Japan. International Journal of Educational Technology, 1(1), 31-49.

O'Loughlin, M. (1992). Engaging teachers in emancipatory knowledge construction. *Journal of Teacher Education*, 43(5), 336-346.

Pelgrum, ten Brummelhuis, Collis, Plomp, Janssen Reinen, 1997

Poole, B. (1997). Education for an Information Age. Boston:WCB McGraw-Hill.

Russell, G., Finger, G., &. Russell, N. (2000). Information technology skills of Australian teachers: implications for teacher education. Journal of Information Technology for Teacher Education, 9(2), 149-166.

Sandholtz, J., Ringstaff, C. & Dwyer, D. (1997). Teaching with technology. New York: Teachers College Press.

Soh, K. H., & Chun, E. W. (1999). Strategies to use ICT and the 7th National Curriculum Standards for the 21st Century. Research Report RRC 99-2, Korean Institute of Curriculum and Evaluation.

Wolfson, L. & Willinsky, J. (1998). Situated learning in high school information technology management, journal of Research on Computing in Education, 31, 96-110.

Yost, D. S., Sentner, S. M., & Bailey, A. F.(2000). An examination of construct of critical reflection: Implications for teacher education programming in the 21st century. *Journal of Teacher Education*, 51(1), 39-47.

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