Creative Convergence Instruction Based on e-portfolio

Hyugil Kwon
Department of Elementary Education, Cheongju National University of Education,
2065 Cheongnam-ro, Sewon-Gu, Cheongju-si, Chungbuk 362-712, Korea
hkwon@cje.ac.kr

Abstract. An e-portfolio system was designed, developed, and implemented at Hanyang Elementary School in Seoul, Korea to facilitate creative convergence instruction. Based on reactions of teachers, students, and parents who used the e-portfolio system, it was found that e-portfolio had positive impacts on supporting creative convergence instruction.

Keywords: e-portfolio, creative convergence instruction, portfolio evaluation

1 Introduction

To meet the needs of creative convergence instruction, Korean government has been trying to innovate public schooling focusing on ‘breaking down the boundaries among subjects’ and ‘integrating various subject areas’. It is often the case that systematic and/or curriculum aspects of education are taken into consideration first when educational innovation is required. The same is true to innovational efforts to meet the need of creative convergence instruction. STEAM, the government-led large scale project for creative convergence instruction, is a good example of this approach. This top-down macro approach, however, often results in very limited effects in that the success of instructional innovations relies on teachers’ teaching practices at schools. This indicates the importance of teacher-led, bottom-up approach. Based on the need of creative convergence instruction and teacher-led bottom-up approach to instructional innovations, this study explores the possibilities and limitations of e-portfolio as a tool to empower teachers to design and implement creative convergence instruction.

2 Theoretical Background

2.1 E-portfolio

E-portfolio refers to web-based portfolio in which learners’ digital documents are recorded and stored to show learning processes and outcomes. E-portfolio was devised to overcome limitations of paper-based traditional portfolio. Barrett (2000) indicated that traditional paper-based portfolio had difficulties in storing and...
managing learning documents continuously. Traditional portfolio which is expressed via analog media is regarded as less suitable to express learners’ emotions and creative ideas than digital media-based portfolio.

E-portfolio is basically regarded as an assessment tool. However, its educational function is not limited to assessment. Digital and internet based portfolio facilitates various learning activities as well. For example, e-portfolio is conducive to enhancing motivation to learn by adapting to digital and internet native learners. It expands the way of expression using multimedia, which facilitates creative thinking and reflection (Kwon, 2002). Sherman (2006) introduced various educational functions of e-portfolio as following:

- Generating digitized outcomes of learning
- Setting learning objectives clearly
- Developing digital skills and literacy
- Showing good examples of learning
- Formative and summative evaluation.
- Facilitating communication
- Facilitating reflection
- Designing and managing instruction
- Organizing learning process and outcomes effectively
- Facilitating interdisciplinary approach to instruction
- Generating and storing narrative portfolio

2.2 Creative convergence instruction

Knowledge society requires individuals to be competent to generate new knowledge with creativity. For this reason, most developed countries as well as developing countries have been making an effort to cultivate talented individuals who are well equipped with creative convergence competency (DeNatale & Wassall, 2006).

Creative convergent skill refers to the ability to make links and connections among different concepts. Creative convergent competency cannot be delivered by a teacher to learners directly. Instead, it is developed at classrooms when authentic tasks are given to learners and performed by them. By performing authentic tasks, learners are required to integrate various ideas to create new ones.

In schools, collaborations and interactions with others (peers or teacher) play an important role for the development of creative convergent competency of learners. It is because creative convergence always depends on diversity and flexibility which tend to be fostered when social interactions are maximized.

To implement creative convergence instruction at schools, it is necessary to integrate different knowledge and skills dealt with in instructions. Integrated approach to instruction requires making relations among different subject areas or units within a subject area. In order for teachers to implement creative convergence instruction, therefore, they should understand the relations among subject areas and units. Based on this integrated understanding, they should be able to reconstruct instructions which are integrated with different subjects and units.
Creative convergence instruction helps learners to deeply understand the meaning of knowledge. That is, understanding knowledge corresponds to realizing its relations with others. Gardner (1991), emphasizing the integrated nature of understanding, argued that deep understanding is the ability to apply knowledge into new situations.

3 Development and Implementation of e-portfolio for Creative Convergence Instruction

In an effort to conduct creative convergence instruction, Hanyang Elementary School located in Seoul, Korea developed an e-portfolio system. Procedure to develop e-portfolio system is as following:

- **Determine goal and scope e-portfolio system:** To determine goal and scope of e-portfolio system of H elementary school, interviews with principal, teachers, students, and parents were conducted. Questionnaire to teachers, students, and parents were developed and administered to collect information regarding the need for creative convergence instruction at H elementary school.

- **Analyze instructions:** To develop e-portfolio system suitable to the needs of H elementary school, instructions of H elementary school teachers were gathered and analyzed. Based on the results of analysis, framework of e-portfolio system was determined.

- **Deliberation and adjustment:** Based on the vision, goals, and teachers’ instructional practices of H elementary school, framework of e-portfolio system is deliberated and adjusted. Several discussions with teachers and parents were conducted to meet this purpose.

- **Development of prototype and implementation:** An exemplary prototype of e-portfolio in which core components were reflected was developed. Core components of the prototype includes supporting project instruction, reinforcing teaching portfolio, facilitating career development, reinforcing portfolio-mediated communication, and scanning paper-based portfolio.

- **Revise and development of e-portfolio system:** Based on the results of prototype evaluation and feedbacks from teachers, students and parents, final e-portfolio system was designed and developed.

Major components of final version of e-portfolio system were as followings:

- **Setting instruction:** Teachers reconstruct subject areas and put the results in the e-portfolio system. It includes such information as objectives, related subject areas, related competencies, and rubrics

- **Generating portfolios:** With the help of teachers, each student generates his/her digitized portfolios based on rubrics and uploads them in the system.

- **Assessing portfolios:** Each portfolio is assessed and evaluated by teachers, parents, and students referring to the rubrics. The quantitative assessment results of each portfolio are integrated and tabulated individually.

- **Exploring results of assessment:** Results of each portfolio assessment are cumulatively tabulated and recorded in the system. Students are allowed to
search and explore their assessment results which are shown by bar graphs. Parents are able to explore their children’s assessment results as well.

- **Sharing Instruction with each other:** Students, teachers, and parents are allowed to share their ideas about project-based instructions which are conducted through e-portfolio system. Bulletin board type communication space is provided for them to share their ideas.

In order to enhance effectiveness of e-portfolio system, a training program was developed and provided to the teachers of Hanyang Elementary School. The main purpose of teacher training program was to help teachers to understand functions of the e-portfolio system and acquire basic skills to utilize them.

## 4 Results and Conclusion

In order to verify the effectiveness of e-portfolio system, reactions of teachers, students, and parents who entered their feedbacks into the e-portfolio system were analyzed. Interviews with teachers, students and parents were conducted as well. Based on the analysis of reactions and interviews, it was found that e-portfolio had the following effects:

- Student’s learning satisfaction was increased.
- Student’s thinking skills could be developed.
- Students could be more aware of their weakness as well as strengths.
- Students were more interested in their career in the future.
- Students’ ability to utilize ICT could be developed.
- Teacher’s teaching expertise could be enhanced.
- Parents’ satisfaction about their children’s learning experience at school was increased.

Instructional innovations require changes not only in instructional methods but systems and curriculum of schooling as well. However, it is apparent that educational innovation starts from changes in classrooms. This study found the effectiveness of e-portfolio as a tool to support the changes in classroom. Students and teachers enjoyed participating in e-portfolio activities. Students could be involved in creative thinking activities through e-portfolio. Teachers could enhance their expertise level through e-portfolio. In addition, parents’ could be more aware of their children’s learning activities at classrooms. In conclusion, e-portfolio can be an alternative for the innovation of creative convergence instruction.

## References

