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e-Portfolio Standardization for Sustainable Learning Communities

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Abstract

A portfolio is used to plan, organize and document learning, and it accumulates results of learning. However, there are some problems in managing a portfolio. For example, it is very difficult to keep the portfolio in the original form physically, and it requires a lot of time and effort to keep it updated. These problems can be solved by an electronic portfolio (e-portfolio), a collection of electronic evidence assembled and managed by a user, usually on the Web. It can efficiently support a learner to manage his or her learning history and keep on learning more to move on to the next level in life so that the learning community becomes more sustainable. This paper explains why e-portfolios are needed to nurture sustainable learning communities. An overview of e-portfolios has been introduced with definitions, advantages, and types of e-portfolios. Furthermore, global trends of e-portfolio applications and Korean activities in e-portfolio applications have been described. Finally, global e-portfolio standardization activities are explained, followed by Korean e-portfolio standardization activities.

Keywords: e-portfolio, sustainable development, sustainable learning communities

Introduction — Sustainable Learning Community

We live in a knowledge-based society, where knowledge is one of the most important aspects in daily life. New knowledge is generated day by day. Therefore, continuous acquiring of knowledge is a way to improve quality of life and also to make our living sustainable.

Learning communities have arrived as a national movement not only in a specific country, but all over the world. For example, the national learning communities in the United States (Wikipedia). Another example is, the City of Hume has identified a

learning community as central to its development and the community values learning as the key to strengthening individual and community wellbeing (Adult Learning Australia, 2005).

What does ‘sustainability’ mean? Usually, the meaning of sustainability is linked to universal values. The World Summit Outcome Document emphasized the integration of the three components of sustainable development — economic development, social development and environmental protection, known as “three pillars” of sustainable development (United Nations, 2005).

However, we need to consider what makes learning communities sustainable in terms of not only the “three pillars” of sustainable development but also the *continuation* of learning communities. What makes learning communities function continuously is the basic question of this paper.

The most important component of a learning community is learners with their own competencies, motivations and sharing a common purpose with others in the community. For a learning community to function consistently, the learners should be willing to participate in it continuously. Hence, it is important that they have well organized information about their motivation, achievements, learning history and learning plans to sustain their interests. Such information about a learner can be included in a portfolio or more conveniently in an e-portfolio. When a learner in a learning community uses his or her e-portfolio effectively, the learning community can be sustainable.

From this perspective, the idea of an e-portfolio recognizes that learning is a continuous process and seeks to provide tools to support that learning. Moreover, the e-portfolio can provide a record of learning drawn from different contexts and allow that record to be updated over time (Attwel, 2005). In order to make a learning community sustainable with respect to continuous learning, the e-portfolio has to be seen as a powerful tool for learners to maintain for their life-long learning.

An Overview of e-Portfolio

Definitions of e-Portfolio

There are several definitions of e-portfolio. Wikipedia (n.d.) has defined e-portfolio as a collection of electronic evidence assembled and managed by a user, usually on the Web. The Department for Education and Skills of the United Kingdom (2005) suggests that e-portfolios are part of a personal online space where learners can store their work, record their achievements (a repository function), and access personal course timetables (an organizing function), digital resources relevant to study (personalized information) and links to other learners (for collaboration and feedback). JISC (n.d.) has defined an e-portfolio as a purposeful aggregation of digital items – ideas, evidence, reflections, feedback, etc. which 'presents' a selected audience with evidence of a person's learning and/or ability. According to IMS GLC (2005), an e-portfolio is a collection of authentic and diverse evidence, drawn from a larger archive, that represents what a person or organization has learned over time.

However, there is no single agreed definition for an e-portfolio. It can be described with terms like traditional portfolios and information technology. That is why Kim and Shon (2010) have defined an e-portfolio simply as a portfolio developed with advantages from using information communication technology.

Advantages of e-Portfolios

Several researchers (Shon, 2008; Kim, 2009; Mason & Kim, 2010; Stefani et al., 2007) have identified the advantages of an e-portfolio. They can be summarized as:

- it can store various data type than traditional portfolios;
- it is flexible in manifestation, management, modification and movement;
- it has openness through using network technologies;
- it allows learners to manage their learning history and competency information that can be exchanged among interoperable systems;
- it allows learners to participate intensively in the reflection process;
- it allows instructors to offer more suitable learning services to learners.

It is important that e-portfolios provide learners in a learning community with the opportunities of selecting more appropriate forms of learning, reflecting on their achievements and future plan, and promoting themselves to the place that they want to belong to. These will enable the learning community to be sustainable.

Types of e-Portfolios

There can be many types of e-portfolios depending on what aspects we use to classify them, such as purpose, function, deliverable, developer, owner and user. It is natural to have several overlaps among the e-portfolio types. Lorenzo & Ittelson (2005) have categorized e-portfolios according to three broad groups: student, teaching and institutional e-portfolios. Another three types of e-portfolios have been explained in the Electronic Portfolio White Paper (ePortConsortium, 2003): personal portfolio for self-reflection, learning portfolio for showcasing and professional portfolio for career decisions.

This paper has preferred to use the following e-portfolio types described in (Stefani et al., 2007):

- *Assessment e-portfolio*: This is used as an assessment tool. It can be used as proof of competency.
- *Showcase e-portfolio*: It is similar to a traditional portfolio and is also called a 'presentation e-portfolio'. Like a CV, it can be used to show competency and developmental possibility.
- *Development e-portfolio*: It can be used as data to support personal development planning. It shows learners' course history, education background, etc.
- *Reflection e-portfolio*: This assists in the self-evaluation of learners. Here, learners can check their learning goals and reflect on their learning process and outcomes.

Global Trends

e-portfolios have been used in many countries for various purposes. E Lorenzo & Ittelson (2005) have explained seven e-portfolio systems and have classified them into four categories in terms of development tools such as home-grown, open source, commercial and common tools. The Appendix of Electronic Portfolio White Paper (ePortConsortium, 2003) has listed survey results explaining 28 academic e-portfolio projects for higher education, including 24 in the United States, two in Singapore, one in Australia, and one in the United Arab Emirates. Some e-portfolio use cases, described in (Kim, 2009; Mason & Kim, 2010), are summarized as follows.

East China Normal University

The e-portfolio in the Higher Distance Education section of East China Normal University acts as the main data source for evaluation. As the main module in the distance learning platform, the e-portfolio collects the relevant information of a learner,

providing access to the concerning platforms and offering links to other websites customized by the user. Teachers and system manager can assess the learners according to their participation and test scores recorded in the e-portfolios.

Life-long Education in Lorraine Region

Any citizen from the Lorraine region can get personal access to LORFOLIO after completing a period of formal education. Users can store their personal information such as of their career path and job-related projects on this website. Documents and web links can be stored and attached as evidence to any piece of information in the system. In addition to the documents management tools, the system allows the user to select parts of the information stored in the system to generate a CV compliant with the EUROPASS format, which can be edited and printed using a word-processor, or to create a personal website.

Calgary Board of Education

In Canada, the Calgary Board of Education (CBE) currently uses an online learning platform to deliver curriculum online in several different teaching and learning contexts. The CBE uses an e-portfolio tool that allows users to create, edit, store, organize, sort and retrieve learning artefacts. The users can also reflect on their work, provide and receive feedback, provide assessment opportunities, present and share collections of artefacts and perform administrative tasks such as monitoring access.

Korean Activities in e-Portfolio Development

Korean Accreditation System for Engineering Education

The Accreditation Board for Engineering Education of Korea, established in 1999, has provided this system to accredit students' ability as good engineers. This accreditation system consists of two e-portfolios. One is for the student to make a learning plan, manage his or her achievements and reflect on them. The other is for the instructor to design lecture plans, counsel and assess.

CareerNet

Focusing on career development of users, CareerNet has been developed for life deign of primary and secondary students as well as for university students. It also plays several roles to support the citizenry in career development and in improving their quality of life. The CareerNet system deals with two categories of items. One is basic

items such as life deign, career research, career activity and achievement. The other is optional items such as management of friends, record of lecture and so on.

CareerNet provides functions such as recording personal data generated in career research and career examination. It stores them for a long time and users can use and manage their data easily. This system can be used for career development program at schools since it provides data related to career plan and information management of students.

The Cyber Home Learning System

Since 2005, the Cyber Home Learning System (CHLS) has been providing e-learning services for primary and secondary schools in Korea. About three million students are using this system and more than 64,000 teachers are managing their cyber classes. The CHLS has been upgraded with new technologies in order to provide users with collaboration learning tools, Wiki facilities and e-portfolio.

The e-portfolio of CHLS has two purposes. One is for the students to improve through self-reflection on their learning activities history. The other is for the teachers to offer suitable learning materials to the students and to gather information on the students' learning status through the e-portfolio.

e-Portfolio Standardization

Standardization of e-portfolios is important to help learners keep their learning continuous so that the learning community can be sustainable. If the students do not want to repeat their portfolio information in different e-portfolio forms whenever they change their learning communities, e-portfolios should be portable between institutions and services. In a nutshell, the interoperability of e-portfolio becomes a critical issue for sustainable learning communities. The use of e-portfolio standards or specifications can provide such interoperability to e-portfolio management systems so that users of the systems do not have to consider a variety of e-portfolio forms.

Global Standardization Activities

IMS and ISO Activities

International standardization organizations such as IMS and ISO have gathered and harmonized the various efforts to develop e-portfolio standards. IMS established an ePortfolio Working Group in May 2003 and released ePortfolio Specification (ver. 1.0) in June 2005 (IMS GLC, 2005). This specification consists of three parts: information model, XML binding and best practice and implementation guide. The data model required for e-portfolio is described in the information model part.

Even though IMS ePortfolio Specification reflects the requirements of mainly in the United States, Britain and Europe, it has been seen as a major leading specification to help people develop their e-portfolio systems. According to IMS, it supports the advancement of lifelong learning, makes exchanging portfolios from school to work transitions easier, allows educators and institutions to better track competencies, enhances the learning experience and improves employee development (IMS GLC, 2005; ePortConsortium, 2003).

Based on its study reports (Kim, 2009), ISO/IEC JTC1 SC36 has begun the standardization project (ISO/IEC 20013) on e-portfolio since March 2010. The purpose of this project is to provide an e-portfolio reference model that can be used to support ITLET systems in a responsive, flexible and modular way to meet the requirements of learners, instructors, e-learning service providers and others.

The standardization project is supposed to develop an ‘e-portfolio reference model’ to support interoperability of information between ITLET systems. The reference model should provide definitions of e-portfolios and their elements, identify commonalities of current implementations and how e-portfolios might integrate with ITLET systems, describe e-portfolio components, represent the needs of stakeholders, and provide information for e-portfolio systems implementation.

Other Activities

The following is a summary of some typical activities by international organizations to standardize e-portfolio.

- ***ePortConsortium***: It is an association of individuals from 72 countries and more than 900 higher education and IT institutions interested in the development of

academic e-portfolio software systems and the establishment of interoperability standards for such systems. The consortium has been trying to create the new e-portfolio application environment and collaborate with IT institutions to define interoperability and transportability measures and develop standards.

- ***OSPI***: The Open Source Portfolio Initiative (OSPI) is a community of individuals and organizations collaborating on the development of the open source electronic portfolio software available. It has released its OSP 1.0 specification in July 2003 and is now OSP 2.5 available.
- ***EIfEL***: European Initiative for e-Learning (EIfEL) is an independent, not-for-profit European professional association. It is responding to the challenge of the knowledge society by creating a community, a framework and tools to identify, develop, recognize and validate the competencies of education, learning and human resources development professionals. It is leading the 'Europortfolio' consortium.

Korean Activities

As described earlier, e-portfolio systems in Korea have been widely applied in various learning communities. Each e-portfolio system has its own model and the learner's e-portfolio can be hardly transferred from one another. In order to provide interoperability to e-portfolio systems, several standardization activities have started in Korea.

KERIS e-Portfolio Standardization Project

The Korea Education and Research Information Service (KERIS) has started the Korean e-portfolio standardization project partially funded by the Korean Agency for Technology and Standard (KATS) in 2010. The project has four steps to develop e-portfolio standard (Kim & Shon, 2010).

- Step 1: Review e-portfolios in the Cyber Home Learning System for K-12 education. It is much easier to apply an e-portfolio standard to the CHLS because KERIS operates the system that students and teachers use for learning and teaching;
- Step 2: Research on e-portfolios for higher and lifelong education. The differences between K-12 education, higher education and lifelong education need to be identified to develop more interoperable e-portfolio standard;
- Step3: Develop learning e-portfolio standard and teaching e-portfolio standard;
- Step 4: The research result should be registered as the Korea Standard so that e-portfolio systems will be developed based on the standard.

Main Tasks for e-Portfolio Standard Development

This paper has suggested the main tasks for efficient development of e-portfolio standard not only for Korean cases, but also hopefully for the international standard development cases. The development process can be divided into three stages: preparation, development and operation. Each stage can have more specified subtasks.

- Preparation Stage: to establish an 'e-portfolio development committee' to carry out intensive research on domestic and international e-portfolio activities and surveys on requirement of stakeholders;
- Development Stage: to develop an e-portfolio standard with research results on self-led learning models, customized learning models and competency information models;
- Operation Stage: to develop a guideline and manual for the e-portfolio standard applications and collaborate to develop international standards.

Conclusion

Learning communities are supposed to be sustainable in terms of not only economic development, social development and environmental protection, but also the *continuation* of learning communities. As the most important component of a learning community, the learners can maintain their life-long learning if they can have assistance from e-portfolios. From that point of view, this paper has given an overview of e-portfolios with definitions, advantages and types of e-portfolios. This paper has also explained global trends and Korean activities in e-portfolio applications such as CareerNet and the Cyber Home Learning System.

Though e-portfolios are much needed to help learning communities be sustainable, they should also be transferable among learning communities. For this interoperability of e-portfolio systems, it is important to develop e-portfolio standards and specifications. This paper has described global e-portfolio standardization activities, especially of IMS and ISO. A Korean e-portfolio standard project has been sketched as its intention of developing an e-portfolio reference model. The KERIS strategy of e-portfolio standardization has also been explained and the main tasks for efficient development of e-portfolio standard have been suggested in this paper.

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