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Preservice teachers' learning experiences of constructing e-portfolios online

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ABSTRACT

This one-year case study reports on the effectiveness and value of electronic portfolios (e-portfolios) from the preservice teachers' perspectives. Using surveys and selected interviews, the study explored how 38 preservice teachers' understanding of the e-portfolios evolved as they completed their elementary teacher education program. Respondents reported that, after using the e-portfolios, they were stimulated to engage in reflective practices, to develop effective learning strategies, and to gain as well as review technology skills. Respondents also indicated frustrations and challenges involved when creating their first e-portfolios. Implications regarding the findings are discussed.

A portfolio is a purposeful collection of examples of learning that provides evidence of someone's knowledge, skills, and dispositions (Sherry & Bartlett, 2005). The arrangement of the portfolio may vary from a dossier to a reflective one. The latter is considered to be supportive of learning because it includes self-evaluation of collected evidence, reflective commentaries on entries and appraisal of prospective learning activities (Struyven, Dochy, & Janssens, 2005). With an increase of focus on performance standards and student-centered classrooms (American Association of State Colleges and Universities, 2007), the portfolio becomes a natural part of the teaching and learning process (Johnson, Mims, & Doyle-Nichols, 2006).

In this information age, as the teaching and learning process can be affected by the technology available, the portfolio has grown and changed to utilize that technology (Penny & Kinslow, 2006). An electronic portfolio (e-portfolio) simply means that the portfolio is technology-based. E-portfolios have advantages over hard copy portfolios by being easily accessible, having the capability to store multiple media, being easy to upgrade, and allowing cross-referencing of student work (Johnson et al., 2006).

1. Perspectives

1.1. An e-portfolio as a learning strategy

Today, e-portfolios have been increasingly used as an alternative assessment tool (Batainehi, Al-Karasneh, Al-Barakat, & Batainehi, 2007). Compared with more traditional knowledge reproduction tests (e.g., multiple choices), new mode of assessment such as an e-portfolio enhances the adoption of deep approaches to learning (Batainehi, 2007). These approaches require students to relate, analyze, solve and evaluate when the e-portfolio creation is a part of their ongoing learning experiences (Milman & Kilbane, 2005; Struyven et al., 2005). Throughout this process, the e-portfolio serves as an important tool with which to engage and motivate students to learn. Learning becomes more student-centered and more interactive as students engage in self-reflections, review goals periodically and assume responsibility for their own learning (Abrami & Barret, 2005). According to Wang and Turner (2006), the power of the reflection is that it helps students and teachers move beyond seeing the e-portfolio as a mere alternative assessment tool to appreciating its value as a learning strategy. van Aalst and Chan (2007) added that e-portfolios assisted student learning by increasing student motivation and allowing the students to publish their work in ways that result in greater self-confidence and more reflections.

1.2. An e-portfolio as a reflective tool

E-portfolios have two major functions: a product and a process function (Zubizaretta, 2004). Student teachers work on a learning portfolio not only to show what they have achieved and learned (assessment of learning), but to reflect on their learning process (assessment for learning) (Barrett, 2007). The process function of the e-portfolio allows student teachers to focus on the process of learning as well as to reflect over their learning as a result of that experience (Zubizaretta, 2004). Research (e.g., van Aalst & Chan, 2007) into the e-portfolio as a tool for reflection has shown that ownership is an important condition for student teachers to use the process function—the assessment for learning purposes. If student teachers see making an e-portfolio as a task that is worthwhile for them personally, they will be more inclined to ask themselves questions about occurrences in their teaching practice, and to find out who they are and who they want to be as beginning teachers (Barrett, 2007). They then will not only focus on carrying out the task, but use the task to reach a better understanding of the learning process they are going through (Beck,

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Livne, & Bear, 2005). Other factors that may influence the process function of the e-portfolio are related to the learning orientation of student teachers, their experiences in producing an e-portfolio, and the instruction and supervision they've had (Beck et al., 2005). Gatlin and Jacob (2002) commented that if students did not understand what an e-portfolio was, the e-portfolio would be reduced to a static collection of material, and dynamic reflections on teaching and learning would not be possible. Britten, Mullen and Stuve (2003) found that, through working on the e-portfolios, students gradually changed their concept of what reflection in the e-portfolio entailed, the purposes of reflection, and their own important roles throughout the process. The students increasingly realized that by using the e-portfolio to critically examine their teaching practice, they were becoming aware of their philosophy of teaching and learning and they could express their knowledge about learning and teaching in explicit terms.

An important aspect of a reflective e-portfolio is its open character (Zubizaretta, 2004). Student teachers often have no experience of producing an e-portfolio before they start their student teaching (Meeus, Questier, & Derks, 2006). They find the "open" character of the e-portfolio especially difficult at first (Meeus et al., 2006). But gradually when they are free to explore their concerns, when they have room to make personal choices, they could understand better the open characteristics as well as their own responsibility for taking care of their learning, and thus making self-reflection a part of their natural learning habit (Meeus et al., 2006; Zubizaretta, 2004). In Bataineh et al.'s (2007) teacher preparation classroom utilizing e-portfolios, for instance, teacher candidates begin with getting to know themselves as learners. They complete online learning mode and multiple intelligences tests. Next they write a reflective paper on how they learn and study best as well as a description of the best ways in which they demonstrate and show their knowledge. Also, in Robbins' (2004) preservice teacher licensure program, teacher candidates focused on a reflection cycle (select, describe, analyze, appraise, and transform) and used this cycle to guide their teacher licensure e-portfolios. The researchers commented that by the time the prospective teachers graduate, reflecting seems to be a natural process.

To better understand the nature of e-portfolio as a reflective learning tool, many researchers have also looked into its benefits on student learning (e.g., Adams, Swicegood, & Lynch, 2004; Evans, Daniel, Mikovch, Metze, & Norman, 2006; Goodson, 2007; Hallman, 2007; Wall, Higgins, Miller, & Packard, 2006). In a research project, preservice and in-service teachers examined the use of digital student portfolios as an instructional and learning tool. The project illustrated the processes by which preservice and in-service teachers were able to work with primary-age pupils to create their own digital portfolios. Evaluation of these portfolios showed a significant improvement in student achievement, and teachers reported these portfolios to be a valuable tool in monitoring student behavior and communicating future educational goals to parents, administrators and other teachers (Jun, Anthony, Achrazoglou, & Coghill-Behrends, 2007). Also, based on a comparative analysis of case studies of seven prospective secondary mathematics teachers, Hartmann and Calandra (2007) studied how developing e-portfolios supported the development of habits of mind emphasized in the curriculum of their teacher preparation program. The researchers observed positive changes in the content and reflections of the participants' e-portfolios across three semesters.

1.3. An e-portfolio as a technology tool

An e-portfolio can be Web-based or formatted using other digital media such as a CD. The e-portfolio broadens the typical paper–pencil format of portfolios by including artifacts that may potentially blend audio, video, graphics, and text, which can be used to connect specific standards to the various artifacts (Hewett, 2004). There are many benefits associated with the electronic format.

First, the e-portfolio presents the learners with many more options for recording and presenting artifacts that demonstrate their achievements and growth (Sherry & Bartlett, 2005). With an electronic format, the portfolio becomes more widely accessible and easy to duplicate for learning purposes. Benefits include reduced storage demands, ease of back-up, portability, ability to create links (Hewett, 2004; Johnson et al., 2006), and the exploration and increased knowledge of technology applications (Wall et al., 2006). Milman and Kilbane (2005) confirmed that, compared to their paper-based analogs, an e-portfolio could be shared across multiple parties simultaneously and could contain multiple media, with added advantages of being easy to upgrade and allowing cross-referencing of student work.

Second, using the technology provides the learners with opportunities to enhance their understanding of the technology itself while learning the content knowledge (Hartley, Urish, & Johnston, 2006; Herner, Karayan, McKean, & Love, 2003). Evans et al. (2006) examined one college's efforts in developing and implementing a mandatory technology skills assessment for beginning teacher education students, and found that most participants said they improved their technology skills by creating their e-portfolios. Technology skills that students mentioned most often in the interviews were: HyperStudio authoring, HTML skills, web page design, scanning, video/audio capture, transfer of files and change of file formats. After students designed and implemented their e-portfolios, Wright, Stallworth, and Ray (2002) surveyed them and found that 88% thought the additional technology elements integrated into the methods block to create their portfolios were worthwhile. This format provides teacher candidates opportunities to market their skills in a professional manner. When reviewing this type of portfolio, the audience experiences a multimedia presentation rather than simply reading about a candidate's past accomplishments (Driessen, Muijtjens, van Tartwijk, & van der Vleuten, 2007).

Third, teachers who demonstrate their competence in technology through the development of an e-portfolio are more likely to incorporate technology into their own classrooms (Sherry & Bartlett, 2005; Wang & Turner, 2006). That is to say, if teacher candidates recognize the advantages of developing e-portfolios, experience the problems encountered in the process, and understand their implications and possible solutions, it is expected that they will be more confident in using e-portfolio in their future classrooms. Overall, an e-portfolio can not only be used as an assessment tool, but a learning tool—both for engaging in deep reflective learning process and for enhancing and acquiring technology skills.

2. Need for this study

Although extensive research has documented the uses of e-portfolios on teacher education, research has not provided substantial evidence regarding the benefits of them on preservice teachers' learning. Previous research suggested that understanding student voices can lead to program efficiency and improved practices (Wetzel & Strudler, 2006). Yet, only limited research (e.g., Wang & Turner, 2006) has examined the benefits and uses of an e-portfolio as a learning tool from student perspectives; most of them (e.g., Penny & Kinslow, 2006) are from the perspectives of administrators and faculty. As Fullan (2007) reminds us that in educational change, meaning must be accomplished at every level of the system, but if it is not done at the level of the students—all is lost. In the case of the e-portfolios, for instance, the students are the implementers and their perspectives are vital to understanding e-portfolios. Further, research is mixed in investigating whether creating a portfolio in digital format also helps teacher candidates gaining additional technology skills. Gatlin and Jacob (2002) found that preservice teachers learned technical skills as a result of their e-portfolio experiences. Ma and Rada (2006), however, found that students reported no gain in their technology skills. The authors speculated this may have been due to