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Electronic Portfolio in Primary School: A Tool for Self-Reflection and Learning

Abstract:

An electronic portfolio provides an environment where students can collect their work in a digital archive; select specific pieces of work to highlight specific achievements; reflect on the learning demonstrated in the portfolio, in either text or multimedia form; set goals for future learning or direction to improve; and celebrate achievement through sharing this work with an audience, whether online or face-to-face. Digital portfolios can be powerful tools for facilitating reflective practice when based on developmental principles and adequately supported by mentoring, peer review, and other effective practices.

E-Portfolio is an improvement of traditional portfolio. It is an opportunity to show skills and abilities which are not easily certified with traditional instruments. Students have the possibility to represent work in multiple modalities and the opportunity to self-reflect and represent how they construct meaning from their academic learning and personal experiences.

The digital portfolio, introduced in primary schools, would be an effective knowledge instrument for children and families, beyond being a valuable tool for teachers. Through a description of him/herself, the child would be able to recognize their emotions, to check their own capabilities and to develop self-guidance. This could be a way to help him/her to modify their behavior in relation to the objectives that he/she wants to achieve. In this way each child would be participatory and responsible for his/her own learning.

While the notion of using electronic portfolios for students' assessment is not new, in Romania teachers are just beginning to explore the advantages of digital formats for these assessment tools.

This article explores the use of the digital portfolio to promote reflection by practitioners and suggests strategies that can be employed by teacher educators to maximize the benefits of these constructivist tools for learning, reflection, and assessment.

Keywords: electronic portfolio, self-reflection, learning, assessment, primary school.

1. INTRODUCTION

Portfolio is defined as “a purposeful collection of student works that display the efforts, development and successes of the learner” (Paulson, Paulson & Meyer, 1991). The most distinctive property of portfolio is that it makes a person both assessor and assessed, apart from making him/her assessed. In this case, apart from being the object of assessment, the student is both the partner of the assessed object and the assessment (Wolf, 1991). Here, the learner actively participates in the selection of the content and determining the selection criteria.

Portfolios serve both for the teacher and for the student. It provides students the opportunity to project their successes and teachers the opportunity to evaluate the development and success of the students. Students test their own works and project them on their targets for the future.

One of the many benefits of portfolio is that brings clarity to the fairness problems in assessing the student performances. In determining the assessment criteria negotiation between the learners and between learner-teachers has an important role. In order to shape the assessment criteria, class discussions of students are allowed. This method provides an educational environment both for the students and for the teachers (Mullin, 1998). This environment will enable the student to be responsible for his/her own development and learning and be aware of his/her own improvement. So, an opportunity will be provided for the learners to assess their own learning.

Students and teacher reach a common decision by acting together to determine the structure, contents and criteria of the portfolio and the necessary documents. The new task of the teacher focuses on encouraging instead of judging students and showing alternatives instead of imposing ideas. This situation provides flexibility for the learning environment.

2. ELECTRONIC PORTFOLIOS

Electronic portfolio, also known as digital portfolio, e-P, digital notebook and webfolios or e-Folios is the transformation of all the products reflecting the development of an individual into soft copies that can be read in digital format (Chang, 2001). Digital portfolios require especially technology knowledge and skills and the use of a composition of electronic media resources such as hypermedia programs, database, word processor software and web design programs. Digital portfolios are collected in a hard disc, a CD-Room or Home Page, corrections can be made on them when necessary and it is easy to carry them.

E-Portfolios are used for a variety of purposes. While one author identifies the types of portfolios as documentation, process, and showcase, others identify them as developmental, presentation, and assessment. One of the widely accepted definitions proposed by Barrett (2007) emphasises the main features of this instructional tool: “A portfolio is a collection of work that a learner has collected, selected, organized, reflected upon, and presented to show understanding and growth over time. Additionally, a critical component of a portfolio is the combination of a learner’s reflection on the individual pieces of work (often called artifacts), as well as an overall reflection on the story that the portfolio tells”.

This process of collecting, selecting, organizing, reflecting upon, and presenting addresses the student-centered nature of e-portfolios identified by other authors. According to Estes (2004), student-centered learning puts power in the hands of the learner, fosters collaboration, and focuses on activities that are useful and relevant. In creating and reflecting upon e-portfolios, students are challenged and empowered to think not just about what they learned, but about how they learned. Although this can be a short-term exercise, ideally the learner is provided with continuous opportunities for reflection. In these circumstances, when students can keep working on them throughout the learning period, e-portfolios provide the benefit of continuous improvement, as students do not see them as definitive. This extensive reflection opportunity is cited by Lewis and Baker (2007) as the e-portfolio's greatest advantage. It also contributes to the development of meta-cognitive skills, allows the student to view learning as a process, and provides an effective means of assessing that process.

Assessment is generally categorized as formative or summative. Barrett (2007) describes the differences in formative vs. summative e-portfolios as follows: "In implementing [formative] portfolios, artifacts are selected by students to tell the story of their learning. The portfolio is maintained throughout a class, term or program. The portfolio and artifacts are reviewed with the learner and used to provide feedback to improve learning. In contrast, when looking at [summative] portfolios... students submit specific required artifacts that are mandated by the school to determine outcomes of instruction. Summative portfolios are usually developed at the end of a class, term or program. These portfolios are often measured based on a rubric and quantitative data is collected for external audiences. The summative portfolio is structured around a set of outcomes, goals or standards and is sometimes used to make high stakes decisions." In relationship to e-portfolios, purely summative assessment has been criticized.

3. BEST PRACTICES

Farr Darling (2000) noted that, in order to make the process as meaningful as possible, certain areas need to be addressed prior to implementation. In synthesizing the findings of Farr Darling and numerous other authors, the following issues emerged as critical in the process of developing meaningful e-portfolios: clarity of purpose; clear evaluation criteria; collaboration; reflection.

As with any other educational tool, the effective use of e-portfolios is dependent upon having a clear idea about the instructional purpose. Defining evaluation criteria would be the next pivotal point in using e-portfolios in terms of student assessment. Collaboration, including the interaction among students and between student and instructor, fosters collegiality and improves performance. Finally, the essence of the e-portfolio concept is the process of reflection, making connections between the past and the present in order to shape the future.

3.1 Clarity of purpose

As previously indicated, the e-portfolio is ideally used in a long-term capacity, the minimum of which would be the duration of a semester. The primary purpose of this is to allow for depth of reflection and continuous learning; however, a possible secondary benefit is that students are able to demonstrate a pattern of achievement and/or growth. There are a wide variety of purposes for creating an e-portfolio, assessment being one of them, and it is the purpose of the e-portfolio which dictates

its design and content (Lewis & Baker, 2007). Students, however, are not always clear on the purpose of the e-portfolio they are charged with creating (Chambers & Wickersham, 2007). It is, therefore, essential that the e-portfolio task is developed with clarity of purpose in mind. More importantly, the purpose and the value of the e-portfolio must be clearly communicated.

3.2 Clear Evaluation Criteria

An important step in ensuring fair and meaningful assessment is familiarizing students with the manner in which they will be evaluated (Bauer & Anderson, 2000). Regardless of whether the goal is assessment of learning, assessment for learning, or a combination of both, there will inevitably be certain learning outcomes or processes that will be of interest to both student and assessor.

Portfolio development, whether formative or summative, is often viewed as an authentic method of assessment in that it involves real-world applications. However, these types of processes and products can prove difficult to evaluate, especially when it is hard to separate the process from the product, or the process is as important, or more important, than the product (Thorndike & Thorndike-Christ, 2010). Rubrics are commonly used in assessing e-portfolio products and/or processes (Barbera, 2009; Lynch & Purnawarman, 2004), but they are certainly not the only means of evaluating learning.

Regardless of the method of evaluation, the expected standards should be communicated in advance. Instructors are not the only assessors of e-portfolio projects. A key component in building metacognitive and self-regulating skills, and a recurring theme throughout the literature on e-portfolios, is the opportunity to self-assess and assess one's peers. These activities are so beneficial in building autonomous learners that authors such as Bauer and Anderson (2000) believe that the incorporation of peer and self-assessment are a requirement for effective e-portfolio development.

In having the opportunity to view and evaluate e-portfolios created by other students, learners are naturally inclined to compare these projects to their own and subsequently make improvements (Barbera, 2009). Including both processes, assessing self and assessing others, maximizes the potential for deeper learning and higher quality products. Thus, e-portfolio-based assessment is ideally a collaborative effort between an instructor, the student, and the student's peers. In both cases a variety of evaluation methods are available such as rubrics, checklists, and rating scales. Regardless of the method employed, defining clear evaluation criteria is the crucial element for successful assessment.

3.3 Collaboration

In addition to fostering a collaborative relationship among students, e-portfolios can help improve collaboration between a student and the reviewer of the e-portfolio (instructor, tutor, advisor, etc.). Reading student reflections and observing the learning process via an e-portfolio can help a reviewer identify the student's progress.

3.4 Reflection

Without reflection, the e-portfolio is really nothing more than an online storage device. It is through the reflective process that a student is able to “see” their learning. Miller and Morgaine (2009) summarize the benefits of reflection as allowing students to: (a) build personal and academic identities, (b) make learning connections, (c) develop self-assessment skills, and (d) plan academic pathways through the development of meta-cognitive skills.

The essence of reflection is making connections between the past and the present in order to shape the future. Reflection improves practice when an individual compares and contrasts experiences, analyzes the actual versus the desired, critically evaluates current assumptions and understandings, and makes modifications as a result (Conrad, 2008). The problem is that this process is complex and difficult for most students.

Just as assessors should be trained in evaluation methods, students should be trained in how to reflect and the purpose of reflection. Instructors should discuss the reflection process, clearly define what it means, and demonstrate how it works (Herner-Patnode & Lee, 2009).

4. FUTURE DIRECTIONS IN DEVELOPING E-PORTFOLIOS

The instructional value of e-portfolios has been recognized by educators since the 1990's. Recently, the emergence of Web 2.0 has reinforced the e-portfolio concept, improving its usability in a variety of educational settings. The body of literature (Owen, 2009; Zhang, Olfman & Ractham, 2007) indicates an increasing potential for merging Web 2.0 tools with e-portfolios to create a dynamic approach to student assessment. Undoubtedly, the new direction in e-portfolio development is associated with ever-growing Web 2.0 technologies that are open-source, flexible, interactive, and accessible.

The Bologna Process, a reform movement aimed at creating a unified, yet diverse, higher education system throughout Europe, has recognized e-portfolios and Web 2.0 as integral parts of the future development of European higher education. Learning via e-portfolios is more comparable, visible, portable, and transparent, which are four main principles of the Bologna process. In regard to Web 2.0, the authors pointed out that e-portfolios based on Web 2.0 tools enhance learning “through mechanisms based on the concept of collective intelligence.” This concept of “collective intelligence” may be associated with the process of collective reflection, or peer assessment, which is one of the main instructional components of the e-portfolio.

Students are more passionate about presenting themselves through a combination of text, images, audio, and video, than using text alone. It seems that multimedia representation of e-portfolio content has already become a widely accepted trend. Therefore, a multimedia approach, supported by Web 2.0, may be considered one of the future directions in developing e-portfolios as an assessment tool.

5. E-PORTFOLIO IMPLEMENTATION IN ROMANIAN PRIMARY SCHOOLS

While the notion of using electronic portfolios for students' assessment is not new, in Romania teachers are just beginning to explore the advantages of digital formats for these assessment tools. The digital portfolio, introduced in primary schools, would be an effective knowledge instrument for children and families, beyond being a valuable tool for teachers. Through a description of him/herself, the child would be able to recognize their emotions, to check their own capabilities and to develop self-guidance. This could be a way to help him/her to modify their behaviour in relation to the objectives that he/she wants to achieve. In this way each child would be participatory and responsible for his/her own learning.

There are different types of student created portfolios in the K-12 context. The literature differentiates between two main types of portfolios: showcase (best work) and process (progress) (Nitko, 2001). A showcase portfolio focuses on final accomplishments. In contrast, a process portfolio is defined as a systematic and organized collection of work that a learner has reflected upon, selected, and presented to show growth and change over time (Barrett, 2007). Either in paper-based format or digital format, a process portfolio is student-centered, focuses on students' progress and supports an environment of goal-setting, feedback, reflection and self-evaluation.

The present study explored the process of implementing e-portfolios in a first grade primary school class in Romania, as a way for students to share their work and exchange peer feedback. This has been an interesting challenge, having to take into account the operating limits of school resources, teacher' skills and the meta-cognitive ability of the children themselves. A weblog was set up through <http://kidblog.org/>. It included all students in the class as registered users and the teacher as the administrator. Each student had an individual password-protected account and a personal space, which will henceforth referred to as the student's portfolio. A student could access his/her portfolio by clicking on his/her name on the class' weblog. Therefore the class' weblog consisted of a collection of students' individual portfolios.

The implementation of e-Portfolio was developed through several activities. The first task was the design of the shared home page, followed by the retrieval of collected, classified and digitized material. Another activity was the use of tools to allow children to create their own digital logo to be included on their home page. The produced e-Portfolios were very good in complexity and quality. Two sample of a student's works are shown in Figures 1 and 2 ("The environment" - WordCloud and "Save the Earth!" - Automotivator).



Fig. 1 A sample of a student`s work: "The environment" - WordCloud (in Romanian)



Fig. 2 A sample of a student`s work: "Save the Earth - Automotivator" (in Romanian) Regarding the role and use of e-portfolios in this study, it is important to note that the e-portfolio tool was not simply used as a repository of students' artifacts. As Balaban et al. (2013) note, the learning aspect of e-portfolios not only embraces the storage and presentation of past work and experience, but also encompasses reflection and feedback. A Web 2.0 e-portfolio facilitates participation, collaboration and interaction among learners and makes feedback easier for both teachers and students (Barrett, 2007). A sample of teacher`s feedback is shown in Figure 3.

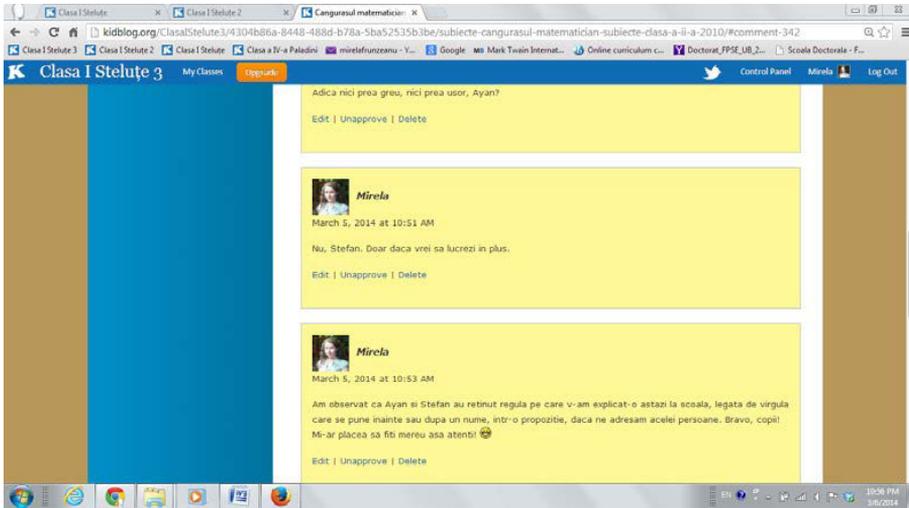


Fig. 3 A sample of a teacher`s feedback to a student`s work (in Romanian)

With regard to portfolio implementation, students uploaded their works in the portfolios throughout the academic year, shared their work with their peers and teacher to receive feedback in order to revise their artifact in a second draft. The use of Web 2.0 technology (weblog) for an e-portfolio made it possible for students to easily upload and share content and easily provide annotated comments asynchronously on their peers` work, a feature restricted to invited users.

Over time, peer feedback became very detailed. Students spent time posting comments about their peers` work. They paid attention to the way those comments were communicated. For an example demonstrating constructive feedback the reader is referred to the sample shown in Figures 4.

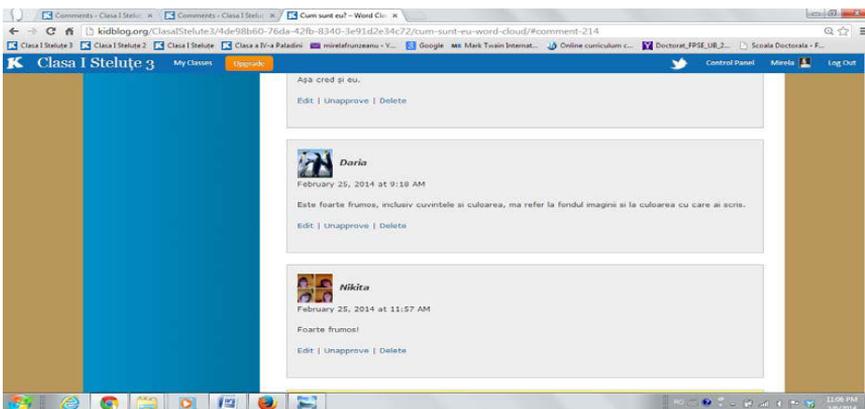


Fig. 4 A sample of a student`s feedback to a classmate`s work (in Romanian)

Among the advantages of using e-portfolio in a primary school is included the easier access to students' work which, in turn, facilitates peer feedback, interactivity and communication. Additional advantages could be: easier making of editorial changes by students on multiple drafts, students' increased motivation through the use of technology and the potential of parental involvement to support and extend the work that is done in the classroom. This finding agrees with Butler (2006) who noted that student "motivation can be encouraged through public access to and recognition of students' work over the web" and with (Ash, 2000), who pointed out that "integrating technology into the learning process motivates students to reach their full potential" (Ash, 2000).

6. CONCLUSIONS

Digital portfolio assessment is an assessment method that can be applied successfully both in teaching the subject and assessing the learned material. Apart from its positive effects on academic success, it also contributes to high self-confidence. Digital portfolio assessment method affects the development of children in various aspects positively apart from their learning skills

As a tool for collecting, selecting, organizing, reflecting upon, and presenting information, e-portfolios have gained in popularity across a variety of disciplines. Most of this popularity is due to the fact that the e-portfolio concept provides multiple advantages to the teaching and learning process.

First of all, the integration of e-portfolios into the course curriculum is labeled as a step forward in developing student's metacognitive skills. In using e-portfolios students are able to view learning as a process and to reflect upon their personal and professional growth. The e-portfolio has also become a commonly accepted tool for measuring learning outcomes, as it provides an effective means, not only for evaluation of student assignments, but for holistic assessment of academic progress.

The instructional value of e-portfolios is determined by several interrelated elements. There are a variety of purposes for creating an e-portfolio. From the standpoint of effective instruction, it is essential to identify and clearly communicate the purpose of using e-portfolios in the classroom. If the purpose of the e-portfolio is student assessment, then it is necessary to define evaluation criteria. Key components of every e-portfolio are the processes of self and peer assessment, the latter contributing to the best practice of collaboration. The opportunity for students to reflect on their own work, as well as that of their fellow students, deepens the learning process and allows the students to make connections between seemingly separate learning activities. As previously indicated, without reflection the e-portfolio is nothing more than an online storage device.

Finally, the advancement of Web 2.0 technologies provides a new and fertile ground for the further expansion of e-portfolios in the educational setting. Web 2.0 tools allow both instructors and students to design multimedia-infused, flexible,

interactive, and dynamic e-portfolios. Although it may be difficult to precisely state the direction in which they will continue to flourish, it is more than evident that Web 2.0 has become the driving force behind future development and transformation of e-portfolios.

The findings of the study indicated that e-portfolios are easily accessible and they have a strong social feedback role as they allow for sharing with peers and parents easily. This finding agrees with Barrett (2007), who explained that the development of the so called Web 2.0 tools, a classification under which weblogs are included was based on an architecture of participation, collaboration and interaction. This in turn can also facilitate a pedagogy of interaction, through the use of those technologies to support interpersonal communication. The technology is changing the portfolio pedagogy by making interaction and feedback easier for teachers and more motivating for students (Barrett, 2007). Therefore, teachers who are interested in promoting peer feedback may chose to invest time on technology and implement e-portfolios with their students.

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