# It's Elementary! Using Electronic Portfolios with Young Students

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**Abstract:** This paper demonstrates how applying technology in a writing workshop can improve instruction and student learning by incorporating student reflection, teacher collaboration, individualized instruction and electronic portfolios where students write daily, have choice in their writing topics, work cooperatively and evaluate their own learning to become more skilled in their writing abilities. It highlights a yearlong project in which two teachers provided their 3rd and 4th grade multiage students the opportunity to publish their work to Web-based electronic portfolios using Word™. This paper describes the project, the process that was taken to develop the portfolios, and the forms of assessment used to analyze the project including six traits, ISTE standards and the State of Arizona Writing Standards that students met through this project. This model can be modified for use at all educational levels.

## Introduction

With increasing demands for the standardization of assessment and the current methods of sharing results, the process of learning often seems overlooked with the focus on students' yearly test scores. According to Goodman (1989), evaluation must be a part of the curriculum and cannot be divorced from classroom organization, from the relationship between teachers and students, or from continuous learning experiences or activities. Standardized tests seem incapable of meeting these needs, especially when assessing a student's writing ability. In the area of writing, where what you know is demonstrated in relation to the context of an entire written piece, understanding the process of what it took to get to the final draft is important. This research focuses on what elements need to be evident for such context-based, student-centered evaluation to take place.

In the authors' experience, student motivation and interest are positively affected when computers are integrated into their learning. One way that students use computers is by publishing their own writing through word processing. Both writing portfolios and electronic publishing have provided a platform for this type of sharing for many years. Portfolios can be a place to share best work, as well as a tool to evaluate the process one went through before taking the final steps to publish a piece. This process informs just as much as does the final product (Graves, 1994; Routman, 1994). Although portfolios' contents can include non-written artifacts, this research focuses on the relationship of the portfolios to the writing process and address the question: What happens to student's writing behaviors when they use an electronic portfolio?

To answer this question, two areas of research were considered: (1) how the writing process is affected by the use of a digital portfolio and (2) what are the best steps when creating digital portfolios for primary age students as they become more technologically skilled, more reflective about their learning, and more skilled in their writing abilities.

## Literature Review

The understood benefits regarding traditional print portfolios for primary-aged students, with consideration to what has been written about electronic portfolios and sound writing instruction in a workshop model, have helped in creating a setting in which the use of electronic portfolios with primary-aged students could be tried.

**Traditional Portfolios and Digital Portfolios**

The word portfolio means different things to different people. A portfolio can be as simple as a collection of a student's best work or as complex as an alternative assessment procedure. It can be a learning strategy or an elaborate assessment. Graves (1994) says a portfolio "is a place where a student's selected work is kept, … [any] container designed or created by the student to hold his or her artifacts" (p. 171). What goes into the portfolio depends on the student's and teacher's purposes (Graves, 1994). Barrett (1998) explains that a portfolio is "a purposeful collection of student's work that illustrates efforts, progress and achievement" (p.7). It is a means of communicating growth made by a student, and not a form of assessment (Barrett, 1998; Dudley, 2001). These opinions all share the common thought that a portfolio is not just a folder of best work. Portfolios are often labeled to define the focus of a particular portfolio. Such labels include: reflective portfolio, showcase portfolio, process portfolio, working portfolio, and assessment portfolio. The labels are used to show the stage or the purpose of the portfolio.

Barrett (2001) makes a distinction between the two terms *electronic portfolio* and *digital portfolio*. An electronic portfolio contains artifacts that may be in analog form, such as videotape, or may be in computer-readable form. In a digital portfolio all the artifacts have been transformed into computer-readable forms. Both portfolios consist of using electronic technologies that allow the portfolio developer to organize artifacts in many media types, including audio, video, graphics and text. Students and teachers can publish their portfolios on CD-Recordable discs, video tape or the Internet (Barrett, 2000).

**Components Necessary for Portfolio Use**

There are two important components that need be a part of a classroom's environment for portfolio use to be effective: involving students in the assessment and review of their work (Graves, 1992), and teacher's authentic planning based on assessments of students' performance (Galley, 2000). Involving students in assessment is important because the goal of evaluation is to have students be self-evaluative. Self-awareness of the learning process is developed through modeling, discussion and instruction on reflection and evaluation of students' work and process (Adodeeb & Courtney, 1999; Goodman, 1989). By looking through students' portfolios and the teacher's assessment folders, the teacher directs the instruction to the needs of each child (Adodeeb & Courtney, 1999; Benson & Smith, 1998).

**Necessary Components for the Reflection Process**

Research shows that there are three important contributing factors that allow for the self-analysis and reflection necessary for student growth through the use of portfolios. The first of these factors is student choice in writing projects (Benson & Smith, 1998; Graves, 1992, 1994; Routman, 1994; Voss, 1992). Although the degree of student choice varies, the research shows that it is important for students to have some say in what pieces are submitted to their portfolios (Benson & Smith, 1998; Graves, 1992, 1994; Routman, 1994; Voss, 1992). Students also need the ability to work on what is important to them in the drafting process as well (Calkins, 1994; Ray, 2001). The second factor is direct instruction on how to reflect, choose and self-evaluate the writing process (Graves, 1992). Students must be taught the process of reflecting and self-evaluation (Adodeeb & Courtney, 1999; Benson & Smith, 1998; Graves, 1991; Kowalewski & Starns, 2000). Students learn how to choose, self-evaluate and reflect by having explicit instruction through models that match their own processes as well as discussion and collaboration from peers and teachers. The final component is peer and teacher feedback (Calkins, 1991, 1994; Ray, 2001; Voss, 1992).

**Portfolio Outcomes and Benefits**

There are three benefits to using the portfolios in the writing classroom. The portfolio is:

(1) A way to communicate more effectively with families: parents can read or view the student's assessment of their skills on an individualized level (Benson & Smith, 1998; Voss, 1992).
(2) A tool to motivate, encourage, and instruct students in the classroom: students become reflective learners as portfolio use is expected to foster self-analysis, goal setting, and a sense of self-motivation by the learner (Barrett, 2000; Galley, 2000; Graves, 1992).

(3) A mechanism to monitor and improve teacher's instruction in the classroom (Benson & Smith, 1998; Galley, 2000; Graves, 1992).

In her foundational work on the conceptual development of electronic portfolios, Barrett (2000) defines each stage in portfolio production as a separate portfolio: the Definition Portfolio (context and goals), the Working Portfolio, the Reflective Portfolio, the Connected Portfolio, and the Presentation Portfolio. Barrett (2001) explains that throughout the creation of the portfolios, the value of creating the portfolios should exceed the effort spent to do so. The same development stages are reflected in the steps for the creation of traditional portfolios. The conclusion can then be drawn that the benefits of using digital portfolios include the same benefits of using traditional portfolios, given equal treatment of the reflection and instruction processes that the research showed as being important to traditional portfolios. Barrett (2001) describes benefits of digital portfolios – unrelated to the learning process – as students' increased multimedia skills, decreased storage space, ease of creating back-up files, portability, and long shelf life.

Student growth in writing through the creation and use of portfolios relies on students' involvement in the assessment process and authentic planning by the teacher. Growth can be expected through instruction and the practice of reflection. Student choice and shared control on what is included in the portfolio are important as well. Much of the research on digital portfolios examines the uses of portfolios by pre-service teachers or upper grade teachers. However, there is a lack of resources written for primary teachers on how the use of portfolios affects students' writing. Much of the research sited discussed how the reflection and self-analysis processes that students go through heighten their ability to think critically, be self-reflective, and set goals for themselves; but did not directly comment on the process of writing.

## Project Description

This paper describes the steps two teachers took to implement the use of electronic portfolios with primary-aged students in a K-8 grade school in a rapidly growing urban community in the Southwest. The changes in instructional approach, practice, and routine include details on providing students with time to write and reflect everyday, conferences with the teachers regarding student progress and learning goals, time to publish work of their own choice, and time to create a digital portfolio to publish on the Internet. The three major objectives of this project were (1) to test whether students' use of a reflective portfolio will improve their writing skills when the portfolio incorporates student choice, reflection and feedback (Graves, 1992), (2) to follow the steps for creating digital portfolios as outlined by Barrett (2000), while assessing how the process may be different for primary age students, and (3) to observe what writing behaviors change when a portfolio approach is used.

The participants for this study included 53 students in a self-contained 3rd and 4th grade multiage program, and their two teachers – a female with 20 years of experience and the lead author of this paper with nine years of experience. The teachers had team-taught in a multiage classroom for three years. The students were not divided into grade level or ability groups. They all received the same instruction except when they were in small flexible groups or having conferences where instruction was individualized to meet their academic needs. Students participated during a variety of different work periods throughout the day. The students used their *writing workshop* time to create an assortment of writing pieces that they could publish to their portfolios. They had *portfolio time* using computers to type and publish work from writing workshop and to create their digital portfolios to be published on the Web. These two work times were used until mid-year. At that time, a *Friday Publishing Workshop* was added to the weekly schedule to allow students more time to choose pieces from their writing workshop and take them through the publishing process.

## Project Implementation

### Portfolio Workshop

The initial step in planning this project was to create a weekly outline of the lessons needed over the entire year to create the digital portfolios. The plan was implemented on the first day of school, and every Monday thereafter. The

once-a-week portfolio time was structured with a 15-minute lesson followed by 30 minutes of work time in the computer lab. Both classes came together during this time in the computer lab. Each lesson provided directions on how to create a portion of a digital portfolio. The lesson was followed by work time for students to complete the given assignment. Students created shells for their portfolios with Microsoft Word™, learning how to link pages together and design their own templates for their digital portfolios. Lessons focused on using the software, design issues related to Web authoring, choice in style, and assessment of quality through rubrics that the students and teachers developed together. Students saved their work in the student shared network space (called the H drive) in a folder called *portfolios*. Each pair of students had a folder into which they placed their completed written work and their artwork. The folders were copied and pasted into the Web site folder as an entire set without having to move the contents of each folder separately. Net names, rather than real names, were used to protect student privacy as all electronic portfolios were published to the Web.

**Writing Workshop**

Planning for writing workshop was done through the collaborative effort of the Multiage Team. Writing workshop was scheduled for 90 minutes every day except Fridays. Students completed Writing Workshop in their own classrooms, with both teachers using the same lesson plan. The long-range plans typically consisted of alternating four week long units of a genre study and open workshop. During a genre study, the teachers expected all students to be engaged in practicing the genre of writing every day and publishing one sample of their work within that genre to their portfolio by the end of the study. During open workshop, lessons covered a specific genre of writing, yet students had the choice to write on any topic. They were expected to complete at least one final draft by the end of each four-week unit. Monday through Thursday, the teachers provided short lessons related to the genre study or to the writing process. Each lesson was followed by 40 minutes of independent writing time. During this time, the teachers held conferences with individual students, or they worked with flexible groups of students in need of similar lessons. After the writing time, the class came together in a sharing circle where there was a discussion, or a student shared a piece of writing. Students kept all daily writing in a draft book, and drafts of products in a folder.

**Friday Publishing Workshop**

*Friday Publishing Workshop* focused on student reflection and publishing. These workshops began with a lesson modeling the reflection process. The students then wrote their own reflection, using their weekly reflection log and their draft books to review their work. Weekly reflections were graded using a four-point rubric. A sharing circle followed to share quality reflections. Following the reflections was the *Publishing Workshop*. During this time, all students were working on publishing a piece of writing by doing artwork, having a peer conference, or rewriting a draft. The teachers expected students to complete a final written draft and submit it to their print (traditional) portfolios before typing it for their electronic portfolio. The computer lab was reserved for students who were ready to type a piece. Published pieces, drafts of published pieces, and reflections (of both student and teacher) were put into the student's print portfolio. Typed copies of the final drafts were hyper-linked within the electronic portfolio and saved in shared folders on the district's network.

## Observations

**Successes**

The teachers found that the portfolios were largely removed from the actual process of writing. They provided interest and motivation for students to do well (which fed into the writing process), and they provided a platform for evaluation and conferences on written work (which offered a credible tool for teachers, students, peers and families). However, as far as their use in the daily operation of writing workshop, they served as references, not as an integral part of the writing process.

The greatest success of this project was that students liked writing time. Student attention, effort and interest in writing workshop seemed to grow throughout the year. Many students often stated that writing was their favorite subject. Some students shared pieces of writing they did in special notebooks at home over weekends or holidays, some of which they added to their school draft books and electronic portfolios. Throughout the year, students'

treatment of their print and electronic portfolios (including their artwork) showed that they carried genuine pride in their work. During Open House, students were very eager to share their work with parents. At the end of the school day, lost writing was taped to the white boards instead of thrown out with the trash. There were voices of concern when the portfolio folders (both electronic and print) were missing. Additional evidence that students enjoyed the project was that students made countless requests for other students to come and listen to their written pieces or look at their artwork.

The teachers assessed growth in writing using six trait rubrics. Student scores increased from the first piece done at the beginning of the year to the last piece completed at the end of the school year. Students became more proficient in the following areas: ideas, word choice, organization, voice, sentence fluency and conventions. These scores do not reflect growth made in other areas including: growth in knowing oneself as a writer, (as shown through weekly reflections), growth in choosing meaningful topics to write about, (as shown by scanning a draft book), growth in collaboration, (demonstrated by peer conferring forms and observation of work times), and growth in assessing/communicating growth, (as shown through the stories about the process it took to get a final draft done).

Although students' improving skills with using technology went nearly unnoticed throughout most of the year, it was a major success. Students' need for teacher assistance with portfolios slowly declined over the year so teacher instruction and intervention became unnecessary. When students did ask questions, most of the time it was for *higher-level* problems such as:
- Where do I save my work if somebody moved the portfolio folder from the main level?
- I can't log on. The network must be down.
- Is this computer connected because I can't see the H drive?

Toward the end of the year some students were not only using the technology to complete assigned work, but were also envisioning how they could make the technology work for them.

**Disappointments and Constraints**

One of the most disappointing aspects of this project was the time that was needed to get all students to publish. Most of this was due to the difference between the teachers' expectations of what students should have in their portfolios and the reality of how long it takes for students to go through the publishing process for one piece. A second problem was uploading student work to the Web site. The district blocks all *ftp* communications, so all student work was saved on disk or CD and uploaded directly to the server or uploaded from home computers. This difficulty caused delays that slowed the public presentation of the project.

One of the major constraints to this research was the lack of control over variables. Although students showed growth in writing, it was impossible to say how much growth occurred due to reflections, portfolios, six trait assessments, conferences, or the workshop model used.

**Recommendations for Future Projects**

One of the ways the teachers assessed student growth was to evaluate student writing ability based on writing using a common prompt. Although using the six trait rubrics made a valuable indicator of student achievement, in the future, as it is a time consuming process, teachers will use this assessment only on students' portfolio submissions.

Writing workshop was managed very effectively. In the future, the teachers will incorporate the writing of final drafts into this segment of the project, rather than isolating this step in *Friday Publishing Workshop*. Instead, *Friday Publishing* will be devoted to publishing only. The daily *writing workshop* will support students' writing pieces to final draft, and the *Friday Publishing Workshop* will support students' publishing of final drafts to portfolios.

Because the teachers did not recognize the need for students' print portfolios until the second semester, the routine of using them did not evolve to the status described by Goodman (1989). To achieve this level of usefulness, the teachers will begin using print portfolios in the beginning of the year, rather than mid year, having students publish a few small pieces to it right away so that they can get the idea of what print portfolio is to contain. Then, following Goodman's (1989) recommendations, the teachers will use the portfolio during student and teacher conferences to develop short- and long-term writing goals. Using this strategy, the portfolio becomes more than just used a storage space for student work.

Just as the teachers will use the print portfolio from the beginning of the year, so, too, will they begin using *Friday Publishing Workshop* at the start of the year. Students learned to really enjoy this time, and found the extra time dedicated to publishing their work to be very useful. When students finish a piece, the teachers will have them save the piece to the publishing folder for publication during *Friday Publishing Workshop*.

The teachers encouraged total student choice in terms of pieces to be included in the portfolio, based on the recommendations of the review of literature. Sometimes students chose pieces that the teachers had not seen before; pieces they liked because of the content rather than excellence of writing quality. In an effort to provide student ownership of the portfolio, the teachers missed opportunities to help students reflect on what such pieces showed about the writer. In the future, the teachers will ask students to consider their feedback when selecting pieces for inclusion, even if such feedback appears negative to students. The teachers will also spend more time on discussing how artwork, design, and color scheme are incorporated into the Web-based portfolio. With this feedback, students then need to make choices on inclusion, be they good or bad.


## Findings

### Student Electronic Portfolios

The students worked on their electronic portfolios in the computer lab once weekly throughout the year. The teachers learned, however, that 45 minutes in the computer lab weekly was insufficient for all students to complete their portfolios.  Three other factors caused delays in portfolio completion: students working in pairs, teacher management of completed steps, and teacher communication of broader goal to students.

Although students went to the lab for 45 minute each week, actual time per student at the computer was approximately 15 minutes, as the lesson took approximately 15 minutes, and each student in a pair was allotted 15 minutes for writing. This partnering arrangement was intended to build community across the classes, which it did; but it also resulted in crowding in the lab. Since the students felt crunched for time, each pair would often let the more proficient student do the work on both papers instead of allowing the less-confident student to learn how. Also, due to inoperative computers, there were often an insufficient number of computers for each pair, so the benefit of having two teachers in the lab was lost because one teacher had to take students without computers to the library.

A second reason for the delay dealt with teacher management of available computer time. Many students were unable to complete the assignment for the day in the abbreviated time available to them. Therefore, the teachers often repeated the same lesson the following week, until most, but not all, of the students completed the task. They then needed to spend time mid-year to get all students ready for the next step in their portfolio creation process. The students who were not playing catch-up had the opportunity to make small changes and experiment with different formats for the portfolios, thus adding to the creativity of their portfolios.

The third issue that caused delay in portfolio creation was the lack of connection to other class work and lack of models of the final product. Until mid-year, students were working blindly on their portfolios with only one teacher's model as an example. Once some students began publishing work to the Web, others gained enthusiasm to complete their portfolios – as they then saw a variety of models to inspire them. Quickly publishing a very small portfolio with at least one piece of writing in the beginning of the year may provide students more interest in updating an on-going project rather than working on publishing one large final product at the end of the year.

### Student Print Portfolios

The students who utilized their print portfolios were the stronger writers in the class. Overall, however, the print portfolios did not make much of an impact on student learning other than providing a common place for work to be accessible for teachers and students. When the teachers realized that students did not understand the difference between the print and electronic portfolios, they redefined the print portfolio as (1) a place containing pieces on-their-way to being published or (2) a holding tank for drafts that are done but still needed peer-conferring, editing, or typing. Many students then began putting work from their draft books into their portfolios independently, but more

often than not; they needed an invitation from a teacher to do so. By year's end, print portfolios looked very different, as some students put all finished drafts into them while others put only copies of final drafts that they had published electronically. Given the inconsistency of the introduction to the students, this variety should be expected.

## Student Reflections

The teachers began the year with the expectation that students would reflect daily on their writing process. Students were to write what they did on a given day, and what they planned to do the next day. At this point, writing workshop did not provide an environment where students could make many individual writing choices. Topics were provided for students with the only choice being in what subtopics they were interested in writing about. Reflections were difficult because the students didn't know what was going to be asked of them the following day, and therefore had little idea of what plans to make. The teachers used this model for the first seven weeks of school until observations showed that students were not considering what they had worked on in writing when making plans for what they were going to do. Since writing reflections reduced the actual writing time from 60 to 45 minutes daily, and since there was no evidence that this requirement was helping the students (other than keeping a record of what was being done), the teachers decided to stop doing reflections until a shift in student engagement occurred.

During the 19th week of school, students were asked to join a writing group of their choice and to resume completing a daily reflection using a new format that had four prompts instead of two. They included: *What did you do today? What went well? What did you struggle with? What are your goals for tomorrow?* This form was used for three weeks but did not elicit thoughtful responses from students. Instead, students wrote simple statements that answered the question, but with little or no specificity to the student's growth as a writer. Based on this observation, the teachers created a checklist to guide student through a reflective process. Their goal was to help students focus on what they did successfully as a writer, and what writing skills they needed to work on. This checklist helped the students complete their reflection logs in a much more meaningful way, and the scores for completion and quality went up dramatically. This trial and error experience of developing an effective format for reflection took most of the year. Once the directions for the reflection were based on student's assessment of writing skills, they seemed much more important to the students' writing and reflection processes. If the teachers had used the revised reflection log format from the beginning, it would have helped facilitate (1) student understanding of strengths and weaknesses as writers, (2) development of personal writing goals that were meaningful and attainable, and (3) insight into the writing process that writers go through to complete a piece to publication.

## Six Trait™ Assessments of Student Writing

All students' writing growth was evaluated using the Six Traits™ of writing to assess a written piece once every quarter. All students wrote pieces based on a given prompt, and they had three days to complete pre-writing, a draft, and final piece. Assessments differed from daily writing because students were given a short time frame to complete the assignment, and they were given specific details as to what they could write about. Based on the average scores from these assessments, students improved their writing ability by .94 on the 6-point rubric. The standard expectation was that they grow an average of one point (1.0) on the rubric. Thirty-four percent of the students in this study did not meet this expectation because their scores showed less than one point growth over the year. Observation shows that these students' last Six Trait™ piece was not their best piece of writing, and that if the scores were based on a different piece in their portfolio they would have showed the expected growth.

## Student Survey Results

The teachers surveyed students on their attitudes toward reading, writing, math and technology at the beginning and the end of this study. Forty-one of the 56 students completed both pre- and post-surveys. The surveys included 12-16 questions about each subject area and related skills and processes in this area. It was not surprising to see relatively no changes in attitudes since most of the students had been in the multiage program for one or two years. One interesting result was that students felt less positively about using the computer at the end of the study. The teachers believe this change can be attributed to the fact that they challenged students to use and improve their technology skills for the first time this year. Students' work in developing their electronic portfolios was dependent on their ability to use the computer, and there was a high expectation for the quality of the finished product. Therefore, this change in attitude may be attributed to students first-time struggle to use technology as an integral part of the writing process.

**Conclusion**

This study provided opportunities for growth for both students and their teachers. Students improved their writing skills, their understanding of and participation in the writing process, their technology skills, and their ability to complete a long-term and complex project – an electronic portfolio of their writing over the course of a year. The teachers learned that they needed to continually refine and adjust their instruction and instructional materials to realize curricular goals, that collaboration facilitated their ability to complete a long-term and complex project, and that each attempt at better teaching offers new challenges and opportunities for professional growth.

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