Abstract

This research will explore what factors influence the motives of both faculty and students as well as what difficulties they are facing in their transition from paper based student portfolios to Web based portfolios. An action research project is conducted at a technology support center. The sixteen item questionnaire is analyzed using The findings co

Introduction

The advancements in the computer world are making possible more and more aspects of our life to be electronically organized. Education, along with other industries and businesses is moving along this path. Many aspects of student’s academic life are in Internet - students add and drop classes, sign up and view their library file, access library items, pay tuition and fines, reserve their books for the upcoming semester in the university bookstore, find faculty and staff information, access class schedule information and other similar activities are only a few to mention. Such paper-to-electronic/Web media transitions result in larger amount of data that is better organized, is more accessible to a larger population via the World Wide Web, and better secured to protect one’s
intellectual property and privacy. On the same note such aspects of the Educational system as educational assessment, student supervision and skill level evaluation are also moving towards the use of computer technology to aid both students and teachers in their attempts to promote more in-depth learning and produce more skilled future workforce (Bracey, p. 617-618).

The Multiple Subject teaching credential program at Sonoma State University has decided to adopt a Web based interface called Live Text which is a Web based portfolio-maker. The faculty of the Literacy Studies and Elementary Education Department believe learning and teaching are complex social acts involving reflection that lead to growth over time. They have designed the digital portfolio as a way for the students, as candidates in the credential program, to demonstrate their professional growth through the collection and reflection upon documents and artifacts that represent them, their learning, their experiences teaching and their overall teacher preparation (Powers, T.; Lane, P.).

How did SSU just come up with using Live Text?

Here is some background information that is closely related to the department’s decision - NCATE (National Council for Accreditation of Teacher Education) Unit Standard 2 requires that an institution (university) adopt an assessment system, which "collects and analyzes data on applicant qualifications, candidate and graduate performance, and unit operations to evaluate and improve the unit and its programs." It is not required from the educational institutions that they have to participate. However, those schools and universities that decide to try to incorporate technology in their curriculum can be accredited by NCATE. As a
result of this, teacher candidates who graduate from NCATE-accredited schools will be better prepared for initial licensing and advanced board certification. The U. S. Department of Education and the Council for Higher Education Accreditation recognize NCATE as a professional accrediting body for teacher preparation.

The goal of this research is to explore what factors influence the motives of both faculty and students as well as what difficulties they are facing in their transition from paper based student portfolios to Web based portfolios. The literature review revealed many reasons why an educational institution would decide to adopt a curriculum that requires the use of Web based portfolios.

What are electronic and web based portfolios?

In the K-12 and college settings the term electronic portfolio means a gathered amount of digital data, which is organized by the student with the purpose to represent or showcase specific event or project while delivering information about both the event/project and the technical skills of the creator (Lankes, 1995). Web portfolio is a form of electronic portfolio which has been posted on the World Wide Web. The advantages of such approach are numerous:

- *Easy access* from any location with Internet connection. Easy peer - sharing and showcasing for individuals or programs.
- *Maintainability* – content can be edited when change is necessary (Locklege & Weinmann, 2001)
• **Usability** – easy to use interface (using Internet browser) which remains consistent across multiple operating systems or operating platforms.

• **Security** – the student can choose to make it available to the public or only to selected viewers. Intellectual property is better secured.

I would like to expand a little more on each of the aforementioned advantages. I see the easy access and the maintainability as paramount. In our more and more personally disconnected (but increasingly more electronically connected) world, to be able to access information from anywhere (distant learning) becomes a must. Progressively a bigger number of classes incorporate on-line assignments or other on-line information gathering activities. Once students create their Web personal portfolios, they can easily share their work with their classmates and get peer-feedback and improvement suggestions. From teacher’s point of view, students are given the tools not only to represent the knowledge they have acquired, but also to learn new ways to showcase their best work. Paperless environments have a whole new meaning here – one of them is that on an assignment due date, the professor will not have to carry home thick portfolio binders (multiplied by the number of students in the class) in order to assess student’s work and progress. Furthermore, if there is some ambiguity regarding evaluating student’s work, the instructor can easily ask his/her colleague’s opinion by telling them to visit the online student portfolio. Regarding the maintainability of Web portfolios, in the experience I have, the learners find it very helpful to be able to access and edit the content of their work from any location when new artifacts appear, or feedback from the instructor or/and classmates...
bring new ideas regarding the organization and content of the their web portfolio. In doing so, the creation of WBP involves elements of self-directed learning and self regulated learning (Chang, 2001; Fischer and King, 1995; Smith and Tillema, 1998). The student is actively involved in the learning process and has control over the achievement of the learning goals. Feedback from teachers and classmates encourages the student to become active self-directed learner (Chang, 2001). Usability is critical when a wide variety of users have the need to be able to work online regardless of their computer’s operating system. If the process of data collection and posting it on the Web is too difficult, many students will resist it and as a result the outcomes may have significantly lower levels of student achievement (Chang, 2001). The security aspect of online materials always comes down to how well they are protected from being accessible by unauthorized viewers. Modern telecommunication technologies make it possible to protect intellectual property where such approach is needed. Many online classes and blackboard/web ct systems require secure log in and as a result dramatically reducing the chances of accidental “sneak in” by outside Internet users. Student’s work is always available for viewing and assessment by the instructor but in many classes the students have a choice whether they want their classmates to be able to see their work.

**Structure and Purpose**

Next, let’s take a look at what is the subject matter of a typical WBP. Portfolios can vary in content. Depending on the educational objectives, a common Web based portfolio has seven major sections (Locklege & Weinmann, 2001):
1. Basic information about the student

2. The learning goals of the student

3. Complete works of the student over the course of study as well as other works developed in the creation process

4. Records of student’s self-reflection or self-assessment

5. Records of teacher’s feedback and assessment

6. Records of peer feedback and assessment

7. Concrete examples of growth or progress (Cole, Ryan, and Kick, 1995)

In section one the student gives background information regarding who they are, what grade level they are in, which class or discipline asked them to put together their portfolio, as well as other activities or hobbies that may have influenced their motivation. Section two has to do with both learning goals of the student as well as what standards or other school-set parameters such portfolio meets. The student defines what he/she expects as outcomes of the portfolio creation. In section three the student includes all work throughout the year/semester. Once completed, the portfolio also serves as showcase model (Lankes, 1995). The forth section has student’s reflection on their own work. This is an important part of the learning process. The student reflects on what was learned, what remains to be learned and how such new knowledge has changed the self-perception of the learner in relation to his or her work and studies (Lancard, 1996). Section five relates to the feedback from student’s teacher or school advisor. As such, the instructor not only establishes the class objectives, but also follows up on them, assesses the outcomes and gives feedback to the students. The teacher needs
to “know what students know” (Barrett & Wilkerson, 2004). Educational assessment will be discussed in the “why use in Education” section in the paper. The sixth section relates to feedback and assessment given by classmates and friends. Web based portfolios have a major advantage over traditional paper-based portfolios – it is much more accessible and easy to share and be reviewed since it is posted on the World Wide Web. Therefore it has made it much easier to collect feedback form both teachers and students because there is no need for one to have to drive to the school where in the past paper portfolios were kept.

**Purpose of the WBP in Education**

Without a doubt, WBP is a wonderful tool in the hands of students and faculty giving them a boundary-free environment for work and creativity. Among the main reasons for the use of WBP in education are:

1. It is used as a assessment tool for evaluating the achievement of individuals or entire programs (Locklege & Weinmann, 2001)

2. It gives “hard evidence” to support student achievement or lack of such (Chang, 2001)

3. WBP is used for planning – when a new class comes, the teacher can look and see the proficiency level of the new students and plan his/her lesson plan in relation to that level (Gold & Lanzoni, 1993)

4. It can be used as a proficiency tool to determine graduation eligibility (Gold & Lanzoni, 1993)

5. It can serve as a showcase portfolio exhibiting student’s best work and higher achievements (Gold & Lanzoni, 1993)
6. It can be used as college admission strategy. Universities are using showcase portfolios to determine eligibility for admission. Having such “hard “evidence to look at, college admission officers are better able to assess applicant’s potential for success at their institution.

**Educational Goals that WBP can achieve**

According to Dr.Chang (2001) the creation and implementation of WBP in Education can help:

1. Demonstrate student’s growth and improvement
2. Encourage students set up learning goals
3. Provide the “hard evidence” concerning student’s efforts
4. Show student’s performance or works
5. Serve the purpose for job application or school application
6. Give the faculty the tools to review student’s learning progress
7. Inspire both faculty and students providing them with new, advanced, interactive web publishing tools
8. Stimulate student’s introspective thinking and enhance self-assessment (Smith and Tilema, 1998; Wade and Yarbrough, 1996; Carroll, Potthoff and Huber, 1996; Vavrus, 1990)
9. Encourage student’s learning interests and build up student’s self-confidence
10. Encourage student’s participation and cooperation, and increase their self-esteem (Mullin, 1998)
Sonoma State University is currently implementing a WBP system (Live Text) which is going to include everything mentioned above and implement it in the Credential Program. The students in program find it very meaningful to put together their projects and artifacts and align them with the state standards which is helping them create their lesson plans to teach in their classrooms.

**Why now in Education?**

For a long time in many professional circles electronic portfolios have been used as a tool to demonstrate professional work and skills (Wonacott, 2002). Duffy et al. (1999) employed portfolios to encourage critical thinking and decision making. Borko et al. (1997) used portfolios to promote learner’s reflection on their learning experience. Student’s self-reflection is critical for one’s educational growth and learning progress. Back in 1938 in his work “Experience and Education” John Dewey wrote: “To reflect is to look back over what has been done so as to extract the next meanings which are the capital stock for intelligent dealing with further experiences. It is the heart of the intellectual organization and of the disciplined mind.” Barbara Cambridge of the American Association for Higher Education, identified reflection as a major building block for what she calls “deep learning”.

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**Deep Learning**
- Involves reflection
- Is developmental
- Is integrative,
- Is self-directive
- Is lifelong
Assessment is crucial in the classroom. “Educational Assessment seeks to determine how well students are learning and is an integrated part of the quest for improved education. It provides feedback to students, educators, parents, policy makers, and the public about the effectiveness of educational services.” (National Research Council (2001). In the same terms, portfolio assessment is vital for both teachers and learners to know where they stand in terms of their skill level and achievement. “In general, portfolio assessment focuses on the collection of multidimensional data in order to understand the learning and changes in learners, as well as stimulating involvement and self-assessment in learners through the interaction and discussion of the portfolio. Portfolio assessment not only provides true and rich information for reflecting and assessing the true performance and achievement of learners, but it also helps students engage in meaningful learning” (Chang, 2001).

**Research Methodology**

Going in this research project, I was aware that as a action researcher I had my personal bias – that is, in my opinion, there was an area of the student transition to Web based portfolios that was not working well or smooth and I wanted to identify it. My rationale for conducting my research is based on my personal observations and involvement in the transition process as tech support staff. I have observed some significant frustration in both students and faculty while using the Web interface for the creation of Web based portfolios. My underlying assumptions were that mostly students (and far smaller number of the faculty members) have:
1. Fear of new technology

2. Lack of appropriate computer skills

3. Lack of clarity what Life Text is and what it does

4. Lack of clarity on the educational objectives using Live Text

**Data Collection Techniques**

I decided to use three data-collecting techniques to try answer my research question – I created a sixteen item questionnaire, I also used my direct observations as a support staff, and I used informal interviews with the participants. Fifteen of the questionnaire’s items were convergent questions, and only the last one was divergent. There were eleven participants – nine students and two faculty members. The questionnaire was given to them in last week of April and first week of May 2004. I realize that the population sample was too small so that this study can make any global generalizations or conclusions. However I think the results of the survey answered to large extend the research question regarding that particular group of individuals and the way they interact with Live Text.

**Overall Plan and Theoretical Perspective**

The plan I had in mind was to combine my direct observations as a support staff (I have witnessed and provided tech support for the Web portfolio transition process for three and a half months), use the ideas conveyed to me through informal interviews with the students and use the findings from the coded questionnaire to either support my hypothesis (expectations) or to prove myself wrong. As to my theoretical perspective – I have stated earlier that I approach
this process from the theoretical point of view of Essentialism. In a way, very likely because of the way I was raised and educated, I can see myself align with some of the notions of *A Nation At Risk* – more specifically with notion of putting a premium on student achievement as well as staying with what is essential and important. The aspects of *A Nation At Risk* with which I do not identify are where the report sums up that all education is behind that of other nations and all schools are providing inadequate education.

**Description of the Research Site**

The action research took place at the technology support center at Sonoma State University. The center also functions as a small computer lab where faculty and students can come and get help with their schoolwork or homework assignments. The staff consists of both graduate student-assistants and full time working professionals. The tech center offers a large variety of help – from simple word processing and web browsing to advanced DVD video editing and web design. In addition, the center conducts in-class training sessions on variety of tech topics and checks equipment out to students and faculty to help them with their projects.

**Description of the participants in the study**

Out of the eleven participants, nine were students in the Multiple Subject teaching credential program and the remaining two were faculty. Out of all participants seven were females. I decided not to code the data based on gender because it was not my intention to research which gender is having more difficulties. Rather, I was interested in finding what technical challenges the group
faced together. Therefore the finding of the research represent the results from
the group as a whole.

**Data Analysis Procedure**

The coding of the findings from the questionnaire use the method of descriptive
statistics – the findings use the terms mean and mode. Answers “a” through “c”
are given the numbers 1 through 4. The mean and the mode will be represented
in whole and decimal numbers for each question. I also used percentage to
calculate the findings for the questions that I felt were giving me information to
support my arguments. If necessary, see the sample questionnaire attached.

**Results**

Here is a chart with the mean and mode for all questions:

<table>
<thead>
<tr>
<th>Question No.</th>
<th>MEAN</th>
<th>MODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>22÷11=2</td>
<td>Bimodal. Both 1&amp;3</td>
</tr>
<tr>
<td>2</td>
<td>27÷11=2.45</td>
<td>3</td>
</tr>
<tr>
<td>3</td>
<td>28÷11=2.54</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td>36÷11=3.27</td>
<td>4</td>
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<tr>
<td>5</td>
<td>28÷11=2.52</td>
<td>2</td>
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<tr>
<td>6</td>
<td>24÷11=2.18</td>
<td>2</td>
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<td>7</td>
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<td>1</td>
</tr>
<tr>
<td>8</td>
<td>33÷11=3</td>
<td>4</td>
</tr>
<tr>
<td>9</td>
<td>12÷11=1.09</td>
<td>1</td>
</tr>
<tr>
<td>10</td>
<td>21÷11=1.91</td>
<td>2</td>
</tr>
<tr>
<td>11</td>
<td>22÷11=2</td>
<td>2</td>
</tr>
<tr>
<td>12</td>
<td>13÷11=1.18</td>
<td>1</td>
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<tr>
<td>13</td>
<td>63÷11=5.72</td>
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<tr>
<td>14</td>
<td>15÷11=1.36</td>
<td>1</td>
</tr>
<tr>
<td>15</td>
<td>21÷11=1.91</td>
<td>2</td>
</tr>
<tr>
<td>16</td>
<td>Divergent</td>
<td>Divergent</td>
</tr>
</tbody>
</table>
I used descriptive statistics to demonstrate the average and most commonly picked choice in each of the sixteen questions. Use the table above for reference. However I find it easier to tease out commonalities out of the data by using percentages. They will be discussed in detail in the next section. I found after finishing my action research that when I began the work, the four assumptions I had in the begging became four revelations why both students and faculty are experiencing difficulties in their transition from paper based portfolios to Web based portfolios. In addition as a staff member at the technology support center I have personal observations and first-hand experience with the kind of frustration and difficulties students and faculty encounter on a daily basis. In my opinion, if I have to estimate what kind of problems are among the most common obstacles, about two-thirds of all problems come form user’s insufficient technological knowledge (see the findings for questions 12 and 16 in the next section). The other one-third most often comes from operating platform-compatibility issues.

**Discussion**

Once again, because of the limited sample size, the finding of this study can be related only to the group of participants that were involved in the survey. Any other generalizations will be hard to support with findings from such limited sample size. After I looked over the answers of the participants, I found the following:

- 82% (9 out of 11) answered “B” on question six. By not choosing “C”, I interpret that they play “safe”, but it is embedded in their answer that they
see no value in using Live Text. If they did see value, they would have chosen “C”. Supports assumption #4 (see Research and Methodology section earlier)

- 91% (10 out of 11) use primarily MS Word, and an Internet browser. The use of Live Text requires additional tech skills such as digital photo creation, scanning, transfer and editing. Supports assumption 2.
- Based on question sixteen about 36% of all participants know some basic image-editing techniques. The rest 64% don’t have such skills. Supports assumption 2.
- After a semester of heavy training and use, about a half of the students said that they know what Live Text is (54%), 36% knows little, and 10% are still unclear (question two). Supports assumption 3.
- Based on the answers on question fifteen 9% have most of the latest pieces of software. 64% are not inclined to learn new software, unless it is required for their job or schoolwork. 27% firmly believe that that the software change/update war is ridiculous, and there is no point trying to keep up. Supports assumption 1 and 2.
- 91% use a computer every day and go in Internet every day. 9% do the same a few times a week. Directly supports assumption 2, indirectly supports assumption 1 (based on the fact that 64% only learn if they have to, and 27% find acquiring new software skills pointless).
• Based on the answers on question twelve 63% of all participants primarily use computers to surf the web and check email. The other 37% admit to do some photo editing in their leisure time. Supports assumption 2.

The following is a chart representing the skill level of the participants in comparison with the skill level necessary for using Live Text (according to the findings in question twelve).

Based on the findings I teased out of the data, I can make a very general conclusion that the students using Live Text lack vital computer skills necessary for posting their work online. Since Live Text itself is a fairly new software company, there were and still are technological “bugs” when it comes down to using it from both PC and Macintosh. Most users did not suspect that the “problem” could be outside of them, because they were not sure of themselves in the first place. If I was to make a recommendation for future changes to achieve improvement, I would definitely advocate for either an intense Live Text training period in the beginning of each semester, or even better – a required Ed Tech class (or two) from the CT&L program. I see no reason why the students in the
Multiple Subject program have to experience such difficulties and frustration, when Sonoma State University has a wonderful Ed Tech program which can provide the necessary classes. Looking back on the questions, if I had a chance to redo the questionnaire, I would ask similar questions in a way so that I can utilize a percentage system and keep it consistent for all convergent questions. This will allow me to be able to add standard deviation and median to my findings. What I would really love to be able to do is to at least quadruple the sample population size for such action research. It is hard and doesn’t feel right to me to try to reveal some ultimate truth and knowledge based on eleven people population sample. At the same time I am very grateful to each one of them for taking the time to provide me with their feedback.

**Future Research**

Once the Multiple Subject program figures out how to better prepare its students in their work with Web based portfolios and get past the technical-difficulty stage, it will be very interesting to see what kinds of student learning come out as a result. The Web based/cyber learning area is still quite new to Education and further research can reveal new findings how it can relate to and influence student learning. B.F. Skinner (1954) suggested that if available, “mechanical devices” can be used in the classroom to promote enhanced student learning and increased student achievement. Future research in this area can discover new ways to use technology for classroom instruction which can greatly alter the widely spread perception of the way students code and decode information. That
can open a whole new world regarding what constitutes student cognition and human thought in general. We live in a very exciting time.
References


