

“IN TRANSITION”: AN ACTIVITY THEORETICAL ANALYSIS EXAMINING
ELECTRONIC PORTFOLIO TOOLS’ MEDIATION OF THE
PRESERVICE TEACHER’S AUTHORIZING EXPERIENCE

by

REBECCA L. FIEDLER

B.M. Southern Illinois University at Edwardsville, 1982

M.B.A. University of Central Florida, 1993

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Major Professors: Donna Baumbach and Gail West

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ABSTRACT

Background: Electronic portfolios are increasingly used to make critical decisions about teacher candidates and program accreditation. Adoption rates for portfolios are at nearly 90% for schools, colleges, and departments of education (Salzman, Denner, & Harris, 2002). Over 50% of institutions who rated themselves or were nominated by others as exemplary users of electronic portfolios use web-based database-driven electronic portfolio systems (Strudler & Wetzel, 2005b; Wetzel & Strudler, 2005b). There is a paucity of theory-driven, systematic, rigorous research on electronic portfolios and a need for in-depth, context-aware research on such initiatives.

Purpose: To explicate the differential impact of different portfolios systems on preservice teachers. The overarching research question was, “What are the preservice teachers’ experiences using tools to create an electronic portfolio?”

Setting: The Teachers College at a large university and the Education Department at a small liberal arts college.

Participants: Six preservice teachers at each institution served as key participants. Informal interviews with numerous other participants provided additional data.

Research Design: Qualitative multi-site case study informed by Engeström’s Cultural Historical Activity Theory (CHAT) (Engeström, 1987).

Data Collection and Analysis: Document analysis, focus group interviews, individual interviews, thinkaloud work sessions, and lab and classroom observations provided data. Qualitative data analysis was informed by Creswell’s “data analysis spiral” and Engeström’s CHAT.

Findings: Visits at both institutions presented several of the key ideas in the CHAT framework including the networked nature of activity, the portfolio as a boundary activity, contradictions within the portfolio activity, and changes to the portfolio activity system. Additional themes included transition, creativity, reflection, and resources.

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LIST OF ACRONYMS/ABBREVIATIONS

AERA	American Educational Research Association
CAQDAS	Computer Assisted Qualitative Data Analysis Software
CHAT	Cultural Historical Activity Theory
FEAPs	Florida Educator Accomplished Practices
INTASC	Interstate New Teacher Assessment and Support Consortium
ISTE	International Society for Technology in Education
MSU	Mason State University
NCATE	National Council for Accreditation of Teacher Education
NETS-T	National Educational Technology Standards
PT ³	Preparing Tomorrow's Teachers to Use Technology
VBC	VendorBuilt College

CHAPTER ONE: INTRODUCTION

Discussions and implementations of electronic portfolio programs have proliferated --- especially in higher education. Cohn and Hibbitts (2004) proclaimed “the electronic portfolio is higher education’s new ‘got to have it’ tool” (p.1) and Batson (2002) wrote about “the electronic portfolio boom.” Teacher preparation programs are on the leading edge of portfolio adoption at colleges and universities across the country as they struggle to comply with increasing accountability, recent changes to the accreditation process, and the accrediting agencies’ demands for data collection.

Introduction

Collections of work, whether in a portfolio binder, memory box, or junk drawer of memorabilia, have been used for many years. In the late 1980s, pressures for improved accountability served as a catalyst for portfolios to enter the assessment spotlight (Elbow & Belanoff, 1997). Since that time, portfolios have been used for documentation of student writing, to showcase student work, and to apply for teacher licensure and certification.

In a separate development, enthusiasm for technology and optimism about the educational benefits it might offer has led to massive spending on technology in K-12 schools. However, research results on technology use have usually been disappointing (Sivin-Kachala & Bialo, 2000). One consistent finding has been that teachers do not use technology. Some attribute the lack of use to teachers’ uncertainty about how best to use technology. Cuban (2001) suggests technology does not help teachers with the tasks they need to do. These results have prompted an increased focus on developing technology skills among pre-service teachers. To that end, a

variety of technology standards have been promulgated, including the International Society for Technology Educators's (ISTE) widely adopted National Educational Technology Standards for Teachers (NETS-T) which were subsequently adopted by the National Council for Accreditation of Teacher Education (NCATE) and integrated into teacher preparation programs.

The expanding use of digital formats for student work allows for the portability of various file types (including text, graphics, video, audio, photos, and animations) from one computer to another or one institution to another. Working in digital formats takes advantage of computer storage, display, retrieval, and communication capabilities to change curricula (Batson, 2002). These developments, along with the popularity and wide availability of the personal computer, have contributed to portfolio development in electronic formats. In addition, over half of the programs receiving monies from the federally funded *Preparing Tomorrow's Teachers to Use Technology (PT³)* grants have used at least part of their allocation to initiate electronic portfolios (Britten, Mullen, & Stuve, 2003).

More recently, the convergence of widespread Internet access and web-enabled databases has made customized systems technically feasible. These systems take advantage of computer databases, servers, interfaces, and custom programming to facilitate powerful data aggregation and to simplify security procedures. Some systems include computer-mediated communication between portfolio authors and their advisers (ePortConsortium, 2003).

Today's accountability mandates have increased the pressure for colleges of education to collect and aggregate data to document achievement of standards. Administrators can mine the data collected by an electronic portfolio system for a variety of purposes: documenting progress toward meeting accreditation standards, program evaluation, and student achievement. This

confluence of factors has elevated portfolio assessment systems to priority status for institutions of higher education.

In addition, legislators have mandated scientifically-based research to drive policy. The research community has responded with calls for higher quality research and principles to guide inquiry (Burkhardt & Schoenfeld, 2003; Feuer, Town, & Shavelson, 2002; NRC, 2002).

Professional associations, including the American Education Research Association (AERA) and the International Society for Technology in Education (ISTE) have initiated discussions on research quality and questions of importance. Editors in leading technology journals have continued the conversations at technology conferences, in editorials (Bull, Knezek, Roblyer, Schrum, & Thompson, 2005; Thompson, Bull, & Bell, 2005), and through published articles. Recent publications suggested important research questions, identified quality criteria, and recommended types of studies to advance the field of education (NRC, 2002) with specific emphasis on educational technology (NRC, 2002; Roblyer, 2004, 2005; Roblyer & Knezek, 2003).

Electronic portfolios are inextricably entwined with these distinct developments throughout our society: technology in schools, accreditation, accountability, and technology convergence. In fact, these events have changed the very face of portfolios. (See Figure 1.)

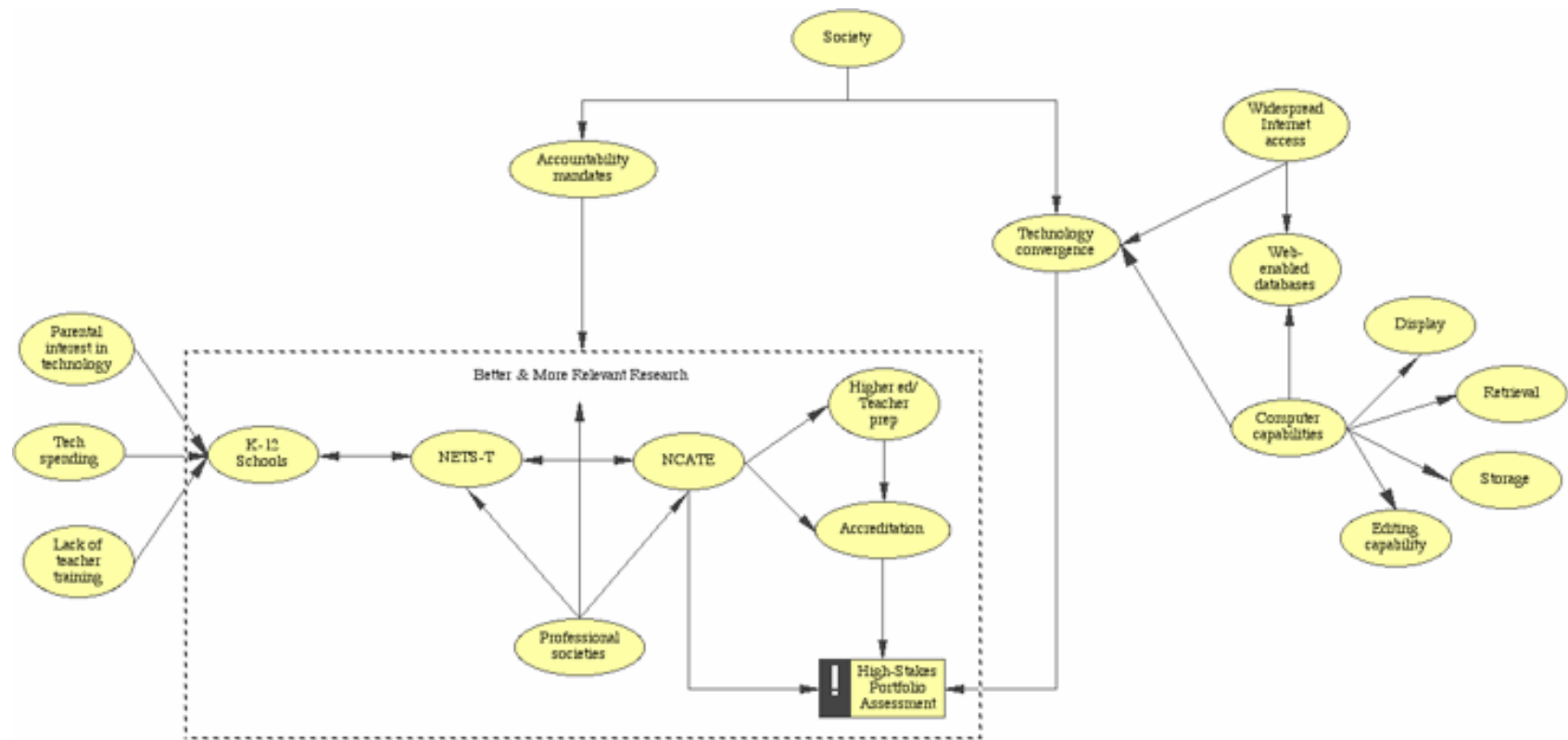


Figure 1. Situation of electronic portfolios in the field.

Problem Statement

Electronic portfolios are increasingly used to make critical decisions about teacher candidates and program accreditation. Adoption rates for portfolios are at nearly 90% for schools, colleges, and departments of education (Salzman et al., 2002). Over 50% of institutions who rated themselves or were nominated by others as exemplary users of electronic portfolios use web-based database-driven electronic portfolio systems (Strudler & Wetzel, 2005b; Wetzel & Strudler, 2005b). The paucity of empirical research on electronic portfolios prompted a panel session at the American Educational Research Association (AERA) 2004 conference where participants discussed a research agenda for electronic portfolios (Carney, 2004). In the National Coalition for Electronic Portfolio Research weblog, Cambridge (2005) stressed the importance of research specifically focusing on policy implications of electronic portfolios and impact on portfolio authors.

Roblyer (2004; Roblyer, 2005; Roblyer & Knezek, 2003) pleaded for research to shape implementation of widely-used technologies and to examine impact on students. She acknowledged the need for in-depth, context-aware research and the legitimate role of qualitative methods. Therefore, to contribute to our understanding of the impact of the portfolio authoring system on the preservice teacher experience, I chose to use Engeström's Cultural Historical Activity Theory (CHAT) to analyze the subjective experiences of two groups of users; preservice teachers creating electronic portfolios using a web-enabled database subscription system and

those creating electronic portfolios using off-the-shelf productivity tools such as Microsoft *Office*, Adobe *Acrobat*, and Macromedia¹'s *Dreamweaver*.

Research Questions

- What are the pre-service teachers' experiences using tools to create an electronic portfolio?
 - In what ways do the tools afford or constrain the tasks associated with electronic portfolio authoring?
 - To what extent do pre-service teachers value the usefulness of their experience creating an electronic portfolio?
 - To what extent do preservice teachers believe they will use the skills acquired as a result of the electronic portfolio development process when they enter the teaching field?
 - How do pre-service teachers describe the dilemmas explicated by Carney (2001), if at all? (These will be described in Chapter Two). Do they identify additional dilemmas?

¹ On December 3, 2005, Adobe Systems Incorporated acquired Macromedia, Incorporated.

Throughout this dissertation, I will refer to Macromedia products to reflect the state during data collection which ended before the acquisition was complete.

List of Definitions

Engeström's Cultural Historical Activity Theory (CHAT)—With origins in the Soviet psychology movement, the CHAT framework examines an activity system consisting of an actor, the object upon which an action is performed, the community within which the activity is embedded, and the way tools mediate the action (Engeström, 1987).

Off-the-shelf productivity tools - Generic software tools including the Microsoft *Office* suite of products, Adobe *Acrobat*, and Macromedia's *Dreamweaver*, among others.

Web-enabled database subscription system—Customized systems developed specifically for creating and managing electronic portfolios. These systems are generally accessed through the Internet using a web browser. Users purchase a time-limited license, with the option to renew when their subscription expires. Portfolio artifacts are stored on and retrieved from servers. Examples of this type of system include *LiveText*[®] and *Taskstream*[®], among others.

Significance of the Study

This researcher used Engeström's CHAT framework to examine the subjective experiences of pre-service teachers creating an electronic portfolio as required by two colleges of education. This work's significance stems from the enduring forces that surround portfolio development systems, such as demands for technology-fluent teachers in schools, accreditation agencies' demands for aggregated data, and technology convergence. It is imperative that accreditation officials, college administrators, and electronic portfolio tool developers understand the impact of such systems on end users in order to improve these systems in ways beneficial to all stakeholders to inform policy, implementation, and tool design. This study responds directly

to Roblyer and others' (Bull et al., 2005; Roblyer, 2004, 2005; Roblyer & Knezek, 2003) calls for research to examine the impact on students of a widely-used technology. Finally, it demonstrates the utility of the CHAT framework to examine the portfolio task employing a specific emphasis on the context of the task.

The study examines two genres of electronic portfolio authoring tools: a web-enabled database subscription system (exemplified by *LiveText*[®] and *TaskStream*[®]) and off-the-shelf productivity tools such as Adobe[®] *Acrobat*[™], Microsoft[®] *Office*[™] products, and Macromedia[®] *Dreamweaver*[™]. Portfolio initiatives using *off-the-shelf productivity tools* have been in existence for more than 10 years, but only limited research is available on these systems. Web-driven electronic portfolios are a more recent phenomenon with little or no available research to inform adopters.

Assumptions

Several assumptions are made in this study. The first is that pre-service teachers can clearly articulate their feelings, attitudes, and perceptions about their portfolio experiences as they make their way through the portfolio process. In actuality, the pre-service teachers are likely to gain new insights and change their perceptions about their experiences as they mature. I must also assume that those interviewed and observed were truthful as they responded to questions. I would like to note that I have no reason to doubt their veracity and feel privileged they chose to share so much of themselves, their thinking, and their work with me—a stranger.

Limitations and Delimitations of this Study

As one would expect, this dissertation has limitations. Ideally, one would be able to investigate the pre-service teacher experience with electronic portfolios throughout the entire multi-year development process. For a dissertation, such a longitudinal approach is not practical. Additionally, commercial products (such as *LiveText*[®] and *TaskStream*[®]) are a relatively new development in the education market. The institutions have used this class of systems only for a short time. Problems associated with relatively new implementations probably appear in the data.

To manage the scope of this work, I chose to delimit the study in several ways. First, only one semester's worth of data was collected at each institution. At Mason State University,² I collected data during a five-week summer session in 2005. At VendorBuilt College, I made five one-week site visits spread from the beginning to the end of the 2005 Fall semester. Second, only preservice teachers were interviewed. Finally, the primary focus of this study was how tools mediate the portfolio authoring experience. Other areas of the activity-theoretical framework received less attention, though none were ignored.

Notably, the institutions in this study operated in very different accreditation environments. They were in different states and the teacher preparation programs faced very different requirements.

² Throughout this dissertation, I will use pseudonyms when writing about the institutions I visited, the students I interviewed, and the commercial portfolio tool used at VendorBuilt College.

Summary and Overview of this Dissertation

The purpose of this study was to explicate the differential impact of different portfolios systems on pre-service teachers. In service of that purpose, the overarching research question for this study was, “What are the pre-service teachers’ experiences using tools to create an electronic portfolio?” To answer this question and accomplish this purpose, I chose to use Cultural-Historical Activity Theory (Engeström, 1987) as a lens to examine how electronic portfolio tools and environments mediate the experiences of pre-service teachers as they create program-required portfolios. In essence, Engeström’s CHAT facilitates analysis of an activity system involving a subject (in this case a portfolio author) acting upon an object (a portfolio, in this instance), while taking into account the complex social and tool-mediated environment in which the activity is embedded. Such analysis reveals the tensions inherent in any activity system.

Researcher Reflection

Before proceeding to the subsequent chapters in this study, it is important I share with you how I came to select this topic for my dissertation. Those familiar with qualitative methods will recognize this self-disclosure by a variety of names, including bracketing, epoche, or reflexivity. I have chosen to call it “Researcher Reflection.” Given the importance of reflection in portfolios, this seems most fitting for a dissertation on electronic portfolios. In contrast to portfolio reflection, this reflection was completed early in the dissertation process, rather than at the end. But the reflexivity doesn’t end with this section. You will hear my voice throughout the chapters—revealing my thoughts and sharing the decisions I made as I engaged in this research. It is only through sharing these thoughts that you can judge the dependability of this work. For

readers unaccustomed to such personal revelations, this may seem strange. For those, I begin with theoretical support and an explanation for this self-disclosure.

Theoretical Support

Rossman and Rallis (2003b) advise qualitative researchers to reflect on role and purpose before beginning data collection. They admonish researchers to “be themselves”. Furthermore, they offer personal perspectives on what that means:

For us, being ourselves means that we have articulated our perspectives or frames of reference toward the topic—that is, we know our beliefs and values and our assumptions and biases relative to that topic. We are clear about our theoretical and methodological orientation: we consider past experiences that might influence our views. In short, we try to be aware of and vigilant about the baggage we carry into the inquiry (p. 51).

Delamont (2002) also reminds qualitative researchers to “be constantly self-conscious about their role, interactions, and theoretical and empirical material as it accumulates. As long as qualitative researchers are reflexive in making all their purposes explicit, then issues of reliability and validity are served” (p. 9). These suggestions help the researcher prepare for surface issues and biases that may impact the research. For these reasons, I wrote notes about how I became interested in researching electronic portfolios, my personal involvement with the portfolio tools and process, and some of the outcomes from completing portfolios before beginning data collection.

But why include this information in the research report? Some writers (Punch, 1998; Strauss & Corbin, 1998) speak of the “researcher as instrument.” While quantitative researchers often use instruments that have been scrutinized for validity and reliability, qualitative researchers depend on their own observations and perceptions in a unique field situation to

collect, analyze, and report data. Rossman and Rallis (2003b) describe this as the researcher's worldview—"the lens through which he sees the world" (p. 10). This worldview shapes a research project from the researcher's earliest curiosity about the topic through the finishing touches on the final manuscript. Just as a report on quantitative research provides details on the instruments that were used, so should a qualitative report allow readers to understand the researcher's personal biography to more accurately evaluate the research report. With this advice in mind, I share my notes with you so you can better understand my perspective and more insightfully read my results.

Experiences with Educational Technology

I first became acquainted with computers and computer programming in a general studies course I took when I earned my Bachelor of Music degree in the early 1980s. In the course, *Computers and Society*, we had several assignments to write small programs in BASIC. I enjoyed this, in a rather masochistic way, but didn't find it particularly useful. We had one microcomputer in the school at my first job. Several of my colleagues and I attended professional development workshops. We enjoyed our activities, but again, didn't find them very useful for the real work of the classroom.

Over the years, computers became more capable and so did I by taking advantage of them. Flawless text and professional results were within my grasp, and my students noticed! I think of Matt who once commented that "none of my other teachers care enough to give us things that look like this," after receiving a particularly professional-looking handout I created shortly after attending a desktop publishing workshop. Admittedly, I rarely achieved that

theoretically-possible perfection. My seventh and eighth graders delightedly pored over classroom handouts looking for mistakes I missed as I proofread my work. (They knew they would probably find one or more incidents of “tot he” when I intended “to the,” an idiosyncratic mistake I still make today). I encouraged this activity, thrilled my students had found a reason to read class materials carefully. When I started teaching computers and working with technology in schools, my students pushed me to try the things they found interesting. Mrs. Teresa Barrett was the first of my colleagues to use *PowerPoint* in her classroom (this was over 10 years ago) and my students wanted me to teach them. First, I had to figure it out for myself. More recently, Justin burst into my office, excitedly telling me about Ms. Howser’s first WebQuest and his absolute enthusiasm for doing the project she had developed as the task.

Other teachers were excited about using technology, too. I can’t think of a teacher using *PowerPoint* without thinking of Mrs. Hansell and the *Jeopardy* games she made. Now, templates for this activity are widely available on the Internet. Whether or not they were available then I do not know. We did not know about them, so we worked for hours to get the results she wanted.³ Mrs. Thomasson read a newspaper article about a high school teacher who posted homework assignments on the school website and wanted to know if she could, too. Her request was the catalyst for a Homework section on the school website that eventually spread to three quarters of

³ It’s just as well we did this on our own. Margaret and I both learned a lot as we tried to figure out how to do the things she wanted. She stopped me in the parking lot one morning on the way into school, beaming with pride, because her son, an honest-to-goodness rocket scientist had not only complimented her computer skills the previous night, but actually asked her how she did something. She told me *that* had never happened before.

the faculty who reported extremely positive feedback from parents. Mr. Merrell happily told how one of his students returned to class after an absence, gloating that he couldn't fuss at her because she had her homework ready to turn in after checking his homework posting on the Internet the night before. Admittedly, this practice of posting homework assignments on the school website was not always joyfully received by our students.

Although my recollections thus far have focused on teachers using technology, I recognize the importance of students using it, too. Two of Ms. Wiggins' students figured out how to make a video clip of themselves to introduce a *PowerPoint* presentation they offered as a class project. She was so impressed she became an avid technology user shortly afterward. Mr. Hinkle tells of his students completing a roller coaster unit at home because they wanted to make sure to leave plenty of time in the computer lab to spruce up their assignments with graphics and pictures of roller coasters. Finally, I remember Henry, an ESOL student, staying in the computer lab after school to study for his tests using some of the interactive games and quizzes Ms. Titus and Mr. Merrell had posted online. Each night, we had to evict Henry from the lab so we could lock up.

I value the fact that technology enables student performance not otherwise possible—whether it is the use of word processing by the student with illegible handwriting or the use of calculators and spreadsheets so students can concentrate on mathematical concepts rather than calculations. Furthermore, technology can give both teachers and students access to cutting edge information not available from traditional resources.

All of the students and teachers I've mentioned have pushed me in new and, at times, challenging directions. Sometimes they have arrived before me (I think especially of my students Daryl and Naman) and brought me along with them. They have forced me to stay current—or at

least try to stay current—in technological innovations, and they have motivated me to figure out how to make current technologies relevant and successful in the classroom.

Obviously, I am excited about what technology can do for teachers and students. However, I want to make it clear that I am not so naïve as to believe that all technology use is good. I've been forced to sit quietly in a classroom through hours of pointless presentations silently delivered via *PowerPoint* because the professor thought this was a good idea. Classmates have complained about online teachers rejecting work because the time stamp on an email message said the assignment was a minute or two late. I've known students who use technology to cheat, and worse—I've seen students use technology to publicize hurtful things about their teachers and classmates.

Rather than be discouraged by these events, I see them as evidence that we as educators have new responsibilities for ourselves and for our students. We need to critically evaluate resources and teach others to do so. We must choose the right technology for the tasks at hand and teach others how to do the same. We need to consider the ethics of technology use and sensitize others to this ethical dimension. Because electronic portfolios are so widely used for high-stakes assessment, we must understand how this impacts our students and portfolio authors.

Research Methods

I am chagrined that much of the research findings on educational technology have been disappointing. I understand that differences in implementation make it difficult to capture and quantify the results of technology initiatives. I know that what works in one classroom won't work in all classrooms and that the same ideas are implemented differently and to different

degrees across classrooms. I have respect for quantitative research. I find the questions of “how much”, “how many”, and “how often” to be interesting. Quantitative data is a powerful tool to support an assertion and many people find quantitative data compelling, although too often they don’t understand the limitations of the research. People, at least in our society, seem to put great confidence in quantitative studies.

Although the questions of “how much”, “how many”, and “how often” are interesting to me, I find questions of “why”, “why not”, and “what else” even more compelling. I am drawn to qualitative research because it allows one to capture the insight behind the numbers and to examine the context surrounding the focus of interest. It is my appreciation for context that drew me to the Cultural Historical Activity Theory (CHAT) framework described in Chapter Three.

Experiences With Portfolios and Electronic Portfolios

I have prepared paper and electronic portfolios, although I didn’t attach the “portfolio” label to most of my projects until much later. Like so many of my peers, my first experiences were with paper portfolios. Recognizing the limitations of those earlier paper portfolios, I became interested in developing electronic portfolios. I have used portfolios to showcase a technology-training initiative for which I had responsibility and to document my skills and abilities for consideration as part of the admission process to the doctoral program. I bumbled my way through both of these projects, unfamiliar with portfolio theory. Nevertheless, both accomplished more than I expected. In each instance, the portfolio was developed with a very specific audience and purpose in mind; each was optional; each was independently constructed

with very little external guidance. Most importantly, each was successful in helping achieve a specific goal.

However, both of these projects have suffered from what I see as the foremost weakness of the paper portfolio format. Since compiling these portfolios, I have had numerous occasions when it would have been beneficial to reference or show them to someone else, but I could not. I made and submitted only one copy that was never returned to me. I cannot use these as examples to share with others, although I have occasionally wanted to. I cannot use them to continue to reflect on my professional growth or remind myself of what I thought was important at the time. I might have made duplicates of these documents if I had understood the importance they would later have for me. At the time, I thought the bulk and the expense was too great. These early experiences prepared me to explore electronic portfolios as a way to embrace the advantages of paper portfolios and eliminate the disadvantages.

Two years ago, an Instructional Technology professor announced he was looking for someone to research electronic portfolios for a project he was directing. I recognized this as an opportunity to take a closer look at portfolio assessment and volunteered to work on this project for the semester. As I learned more about portfolios, I realized the paper documents I had created earlier could appropriately be called portfolios. The electronic format seemed to negate the biggest disadvantages of their paper predecessors, although I recognized some thorny new issues involving privacy and too-open access.

Coincidentally, I was concurrently enrolled in a class with a professor who wanted all students to create an electronic portfolio of work products. I was excited to have this assignment and began planning my portfolio. I used the skills and knowledge I was developing in this class in projects outside of class. I was making notes to remind myself of how I was applying

information presented in class to real-world projects in other areas. However, as the semester progressed, my enthusiasm waned. This professor's approach was prescriptive. She chose the artifacts that were to be included and determined how they were to be organized. She dictated the parameters of the single reflective statement to be included in this portfolio, turning it into a fill-in-the-blank exercise. There was no room for me to add an artifact or document showing what I found as important or meaningful. My initial enthusiasm had turned into disappointment—and ultimately resentment—as I realized the futility of this exercise. It seemed the professor had corrupted a powerful learning experience into something my classmates and I hated. For those classmates without prior portfolio experience, this one defined their understanding of portfolio assessment (read: negatively).

Despite this setback, I was intrigued by electronic portfolios and urgently wanted to create one for myself, a task I completed a year ago. The only requirement I had to meet for that project was to demonstrate I had met the standards for my doctoral program. Choice of tools, structure, design, portfolio content, and formats were entirely up to me. For my own portfolio, I turned to a generic tools approach using a combination of *Macromedia's DreamWeaver*, *Adobe Acrobat*, *Microsoft PowerPoint*, and cascading style sheets.⁴ I am convinced creating the

⁴ I started to create my project using the same system used at VendorBuilt College. Although I recognized it to be less flexible than a generic tools approach, I believed I could discover ways to make it suitable for my use and was confident I could bend it to my will. I made earnest attempts at using it, but eventually abandoned it because it worked unreliably with the Macintosh operating system – my primary computer platform. I understand this problem has since been resolved.

portfolio helped me synthesize my experiences (from my classes and at work) and the program standards more completely than other approaches. The project was both challenging and satisfying. Most importantly, this portfolio has been extremely useful as I have modified it to serve as an interview tool and have referred to it as a resource for professional interactions with others.

Although not a traditional portfolio, I think of my friend's Christmas tree as one of the most interesting examples I have of a portfolio. I first learned about her Christmas tree on a trip to San Francisco one summer. As we indulged in the typical tourist fare, we stopped at numerous shops looking for souvenirs and gifts for our friends and family. She wanted to find a Christmas tree ornament with a trolley. It was summer, so Christmas ornaments weren't a featured item in any of the stores. We looked in one shop after another. In the course of our shopping and touring, I asked why it was so important to her to find a Christmas ornament with a trolley. She told me about her Christmas tree.

As Christmas approaches each year, she reflects on her biggest accomplishments or most exciting events over the past year. She buys an ornament commemorating that event or accomplishment and adds it to her collection of ornaments to remind herself of that part of her life. A few months later, I visited her home during the Christmas season. Not surprisingly, she had a Christmas tree in her living room and a collection of interesting and unique ornaments, including a trolley, hanging on the tree. Since I knew each ornament meant something, I asked about some of the more interesting ornaments. She began sharing brief stories about things she had done or places she had gone before I met her. This story sharing is part of why she enjoys her collection of ornaments as much as she does. Each ornament prompts a story to share with new friends as a way to get to know them or a shared experience with closer friends. I treasure

my friend's Christmas tree as a way to share creative alternatives for portfolio memories, storytelling, and conversation.

Interest in Researching Electronic Portfolios

Figure 1 illustrates the study of electronic portfolios at the intersection of some major societal trends and issues. Similarly, the study of electronic portfolios is situated at the intersection of my interests in educational technology, electronic portfolios, and qualitative research methods. Throughout my doctoral program, I have been attracted to research projects and research questions that enable me to scrutinize and understand successes—a successful study strategy, a favorite piece of software, or an initiative that had an important impact. I am generally interested in understanding why these things are successful in hopes that I can replicate those successes in later projects.

My personal experiences with creating portfolios have usually been extremely satisfying. Reviewing my portfolio experiences highlights my desire for creativity and flexibility. I notice I categorized as successful those portfolios that allowed me the flexibility to represent my work in my own way.

I recognize educators and evaluators will often need to determine guidelines for portfolio authors. I am concerned those guidelines may become too restrictive and am reminded of *The Portfolio: Sonnet, Mirror and Map*, one of my favorite readings on portfolios. In it, Mary Diez (1996) likens a portfolio to a sonnet. She points out that a portfolio author, like a sonnet writer, can have nearly infinite room for creativity within a prescribed structure.

In part because I had such a disappointing portfolio experience, I wanted to examine the portfolio experience from the student perspective. I wanted to know what makes for successful implementations. Equally important, I wanted to know what factors contribute to making a portfolio experience dissatisfying. I hoped to uncover insights other institutions will find useful as they design their own implementations.

With so many institutions driven to portfolio assessment by accrediting bodies it is essential researchers begin to offer guidance to those responsible for implementation so they can maximize the possibilities portfolio assessment offers while mitigating any risks. I hope my work on this dissertation can contribute to understanding, and ultimately improving, teacher preparation programs.

The next chapter, Chapter Two, explores the contemporary conversations about electronic portfolios by revisiting earlier research on portfolios—both paper and electronic. Chapter Three focuses on Engeström’s Cultural-Historical Activity Theory (CHAT)—a central idea of this dissertation. In that chapter, I describe CHAT and its relevance to the field as I have come to understand it through reading the literature. Chapter Four details the design of this study and the methods used in the field and during analysis. In Chapter Five, I describe dialogues with pre-service teachers about their electronic portfolios and what I saw watching them immersed in the creative process. Finally, I analyze those findings in Chapter Six.

CHAPTER TWO: LITERATURE REVIEW ON ELECTRONIC PORTFOLIOS

For many years, artists have used portfolios to showcase their work, demonstrate their skills, and find employment. This same idea has grown increasingly popular in education as both teachers and students collect artifacts to demonstrate skills in specific areas. Portfolios have been used in humanities (Reiss, 2001), exceptional education (Carpenter, Ray, & Bloom, 1995; Karoly, 1996), research information skills (Fourie & van Niekerk, 1999, 2001), management (Zalatan, 2001), nursing (Lettus, Moessner, & Dooley, 2001), National Board of Professional Teaching Standards (Shulman, 1998), teacher education (Lyons, 1998b; Snyder, Lippincott, & Bower, 1998b), and for faculty tenure and promotion decisions (Quinlan, 2002; Shulman, 1998). This literature review will focus primarily on portfolio use in teacher education and will borrow from the literature on paper and electronic portfolios.

Several definitions of portfolios have been offered. One of several frequently cited is that of Paulson, Paulson, and Meyer (1991): “A portfolio is a purposeful collection of student work that exhibits the student’s efforts, progress, and achievements in one or more areas. The collection must include student participation in selecting contents...and evidence of student self-reflection” (p. 60). Campbell, Cignetti, Melenzyer, Nettles, & Wyman (2001) define a portfolio as “an organized, goal-driven documentation of your professional growth and achieved competence in the complex act called teaching” (p. 3). Finally, Shulman (1998b) defines a teaching portfolio as “the structured, documentary history of a set of coached or mentored acts of teaching, substantiated by samples of student portfolios, and fully realized only through reflective writing, deliberation, and conversation” (p. 37).

Portfolios are widely used in teacher education programs. In Florida, nearly all teacher education programs use portfolios (Salzman et al., 2002). Additionally, teacher education programs are moving to electronic formats to satisfy their data collection requirements in support of licensure and accreditation (Britten et al., 2003). This chapter begins with a chronicle of portfolio history and development and concludes with a “best evidence” review of empirical studies focusing on pre-service teacher preparation.

The Genesis and Evolution of Portfolios

The use of portfolios in education exploded in the 1980s and 1990s (Elbow & Belanoff, 1997). Portfolios have been used for a variety of purposes. Adoption in higher education has frequently been in response to increasing accountability demands (Yancey & Weiser, 1997). “Portfolios...can reveal, in the aggregate, the state of an academic program; they can provide valuable insights into what students know and how they construct that knowledge; they can provide institutional barometers, if you will, that suggest programmatic highs and lows, strengths and weaknesses” (Burch, 1997, p. 263).

In essence, portfolio authors choose and present a collection of artifacts to a specific audience. Pre-service teachers typically prepare one or more portfolios to demonstrate teaching competence or to document achievement of specified standards for credentialing purposes. Artifacts in the portfolio may include tests or test-like events, observations, and work samples (Snyder, Lippincott, & Bower, 1998a). Products of teaching or student learning, materials from oneself, and materials from others provide additional forms of portfolio evidence (Seldin, 1997). Often, portfolio entries are accompanied by reflective statements engaging the portfolio author in

metacognitive thinking about their practice and further refinement of that practice (Diez, 1996; Lyons, 1998c; Seldin, 1997).

Many have claimed portfolios offer substantial benefits for pre-service teachers' reflection and development (Mullin, 1998). Shulman (1998b) writes of portfolios representing the intersection of pedagogy and content, while Paulson, Paulson, and Meyer (1991) speak of the intersection of instruction and assessment. Portfolios encourage greater reflectivity and improvement in classroom practice, offer a longitudinal view, connect teaching to learning, promote collaboration and discussion, and shift ownership of the portfolio to students (Shulman, 1998).

The Growing Popularity of Electronic Portfolios

More recently, the use of electronic portfolios has grown in popularity. This trend is partly in response to the limitations of paper portfolios which are difficult to reproduce and distribute and sometimes overwhelm storage facilities with their bulk (Strudler & Wetzel, 2005b). The increasing use of digital formats for student work and the need to organize, search, document, and transport this work also contributes to the trend away from paper. Another major factor is that since 1999, 441 PT³ grants totaling \$337.5 million dollars have been awarded for technology-related activities including faculty development, course restructuring, electronic portfolios, and other projects (U.S. Department of Education, 2005). In about 50% of these grantee institutions, funds are used, at least in part, to fund the move from paper to electronic portfolios (Britten et al., 2003). Electronic portfolios are used for the same purposes as their paper predecessors including assessment, accreditation, reflection, and professional

development. Barrett (2005b) asserts the traditional portfolio process is enhanced by technology through “archiving, linking/thinking, storytelling, collaborating, [and] publishing.” (p.5)

Broader societal changes also contribute to the recent changes. Widespread Internet access and web-enabled databases have attracted an increasing number of electronic portfolio tool developers into the educational software market and customized systems are growing in popularity (Barrett, 2005b; ePortConsortium, 2003). Many of these are focused on accreditation and assessment demands (Barrett, 2005b). Other societal factors that contribute to the growing popularity of electronic portfolios include the increase of accountability mandates, interest in technology in schools, and burgeoning capabilities in technological infrastructures. Additionally, the National Council for Accreditation of Teacher Education (NCATE) demands aggregated data to comply with their accreditation process.

Increasing accountability mandates. The *No Child Left Behind Act of 2001* ("No child left behind," 2002) has set teacher quality standards, mandated school improvement, and set new goals for technology-proficient students. Teacher preparation programs are struggling to provide highly qualified candidates to meet these new demands. NCATE oversees this process through a performance-based accreditation system requiring documentation of candidate performance (Salzman et al., 2002). Many teacher preparation programs have traditionally relied on paper-based portfolios to document candidate qualifications, but current data aggregation requirements make paper portfolios unmanageable for this purpose. A number of teacher preparation programs are turning to electronic portfolio systems to comply with NCATE's new requirements (Britten et al., 2003).

Increasing interest in technology in schools. *Technology Counts 2005* reports a 3.8:1 student-to-computer ratio for instructional computers and 7.6:1 when considering access only in

classrooms. Internet-connected computer ratios are 4.1:1 overall and 8:1 in classrooms. In fact, 99% of all public schools have Internet access and 87% of those schools have high-speed Internet access (Fox, 2005).

Despite the dramatic improvements in hardware and Internet access, inadequate technology skills of teachers remains a problem (Ansell & Park, 2003) although the trend toward technology-using teachers is rising (Fox, 2005). With the majority of technology funds going to hardware and infrastructure purchases, sorely needed investment in professional development is lacking. In fact, staff development is expected to account for a mere 15% of technology budgets (Ansell & Park, 2003), although the recommended level of funding is 30% (Apple, 1995).

Sivin-Kachala and Bialo (2000) reviewed 311 research studies and concluded that the teacher's role in the classroom and professional development were the most important factors in the use of educational technology, even more important than frequency of use. Apple Classroom of Tomorrow (ACOT) research has highlighted the importance of using technology in a variety of ways, which requires skilled teachers (Dwyer, Ringstaff, & Sandmore, 1990). Conventional wisdom might suggest that as the teaching force ages the influx of younger educators will cause this problem to dissipate. That does not appear to be the case. According to the U.S. Department of Education's 1999-2000 Schools and Staff Survey (SASS), only 42 % of novice teachers feel prepared to use computers for instructional purposes (cited in Ansell & Park, 2003). Professional development and preparation is the critical key to effective instructional use of computers. More training is needed, especially in how to integrate technology into teaching (Ansell & Park, 2003; Silverstein, Frechtling, & Miyaoka, 2000; Sivin-Kachala & Bialo, 2000). Mere technology literacy is no longer enough. Acquiring technology "fluency" will allow pre-service teachers to

face the changing technology field with the confidence needed to sensibly apply new developments to their teaching.

To respond to these needs, the International Society for Technology in Education (ISTE) has promulgated a set of standards for teachers. Currently, these standards have been adopted or adapted in 49 states, including Florida (International Society for Technology in Education, 2004). The Florida Educational Accomplished Practices document outlines 12 competencies for teachers, including one focusing on technology use (Florida Education Standards Commission, 1999). At the pre-professional level for technology competency, the first key indicator suggests competence can be demonstrated as defined by the Florida Technology Literacy Profile (available at <http://www.doe.firn.edu/edtech/sr/downloads/FLTechLiteracyProfile.pdf>)—a document that mirrors the NETS-T standards. Pre-service teachers must demonstrate these skills through their electronic portfolios.

Increasing capabilities in technological infrastructure. The ePortConsortium (2003) suggests the rise in e-learning has contributed substantially to the viability of electronic portfolio adoption. The expanding use of digital formats for student work theoretically allows files to be moved from one system to another within the same institution (course management system, student information system, and electronic portfolio system) to other institutions or to the workplace. Administrators can mine the data collected by an electronic portfolio system for a variety of purposes, namely documenting: progress toward meeting accreditation standards, program evaluation, student achievement, and promotion decisions. Web-driven database portfolios make all of this possible.

Taxonomy of Portfolio Types

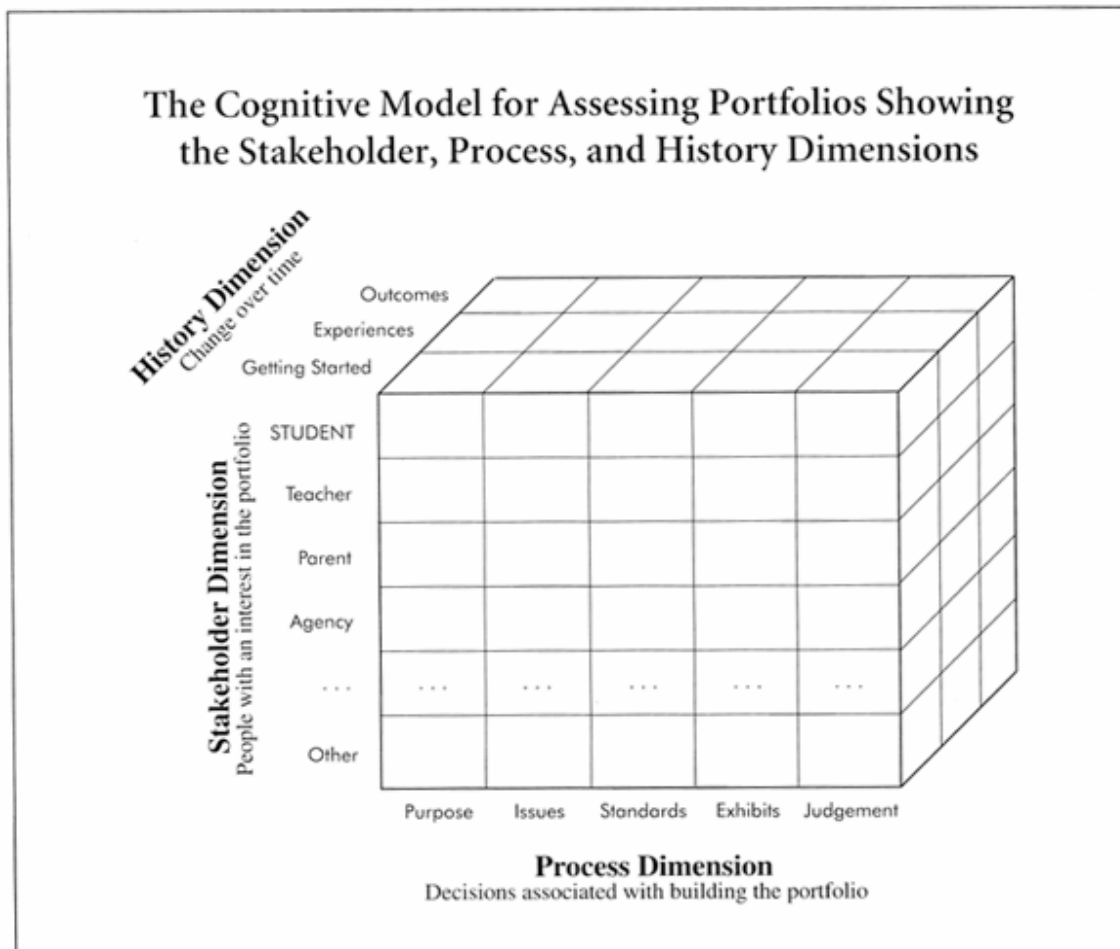
To facilitate discussions about the various types of electronic portfolios, the American Association for Higher Education (AAHE) (2003) proposed a *Taxonomy for Electronic Portfolios*. This taxonomy has three main discriminators: context, author, and purpose. The context describes the setting in which the portfolio is developed. Contexts include course, program, institution, inter-institutional, and independent portfolios. The author of an electronic portfolio may be a student, faculty member, administrator, organization, or other individual including those not specifically affiliated with the learning organization. Purposes for portfolios include development (self-assessment, advising, documenting learning over time, documenting professional development, building the curriculum, adding to the knowledge base of or among the disciplines), evaluation (achievement of learning outcomes, high stakes evaluation, accreditation, promotion and tenure), and presentation (showcasing achievement, publicizing organizational reflection and progress, and responsiveness to state and national need for information). To use terminology from the AAHE taxonomy, many of the implementations in teacher preparation programs consist of independent student-created evaluation portfolios documenting performance throughout the teacher preparation program. Data from these individual portfolios can be aggregated to generate institutional evaluation portfolios.

Decisions and Dilemmas Surrounding Portfolios

Faculty and students participating in portfolio activities face a bewildering set of decisions as they plan for and construct portfolios. Paulson and Paulson (1990) developed a Cognitive Model for Assessing Portfolios (CMAP) “designed to be a lens to view, think about,

and make decisions about portfolio projects” (Paulson & Paulson, 1996, p. 28). See Figure 2. Their intent was to develop a rich and complex model to capture and preserve as much of the complexity of student portfolios as possible. Further, they recognized the desire of some to aggregate portfolio data and offered the model as a way to document the impact of such aggregation.

The CMAP model (Paulson & Paulson, 1996) depicts the three dimensions: production process, stakeholders, and changes over time. Notice this model holds the student as the most important stakeholder, while acknowledging the role of others interested in a student’s portfolio. In their view, stakeholders can be seen not only as audience, but as shapers of the portfolio experience. Although Paulson and Paulson intended to create a tool to describe portfolios within their contexts, some have used it as a way to plan portfolio initiatives. The use as a planning tool has led to strikingly different program designs.



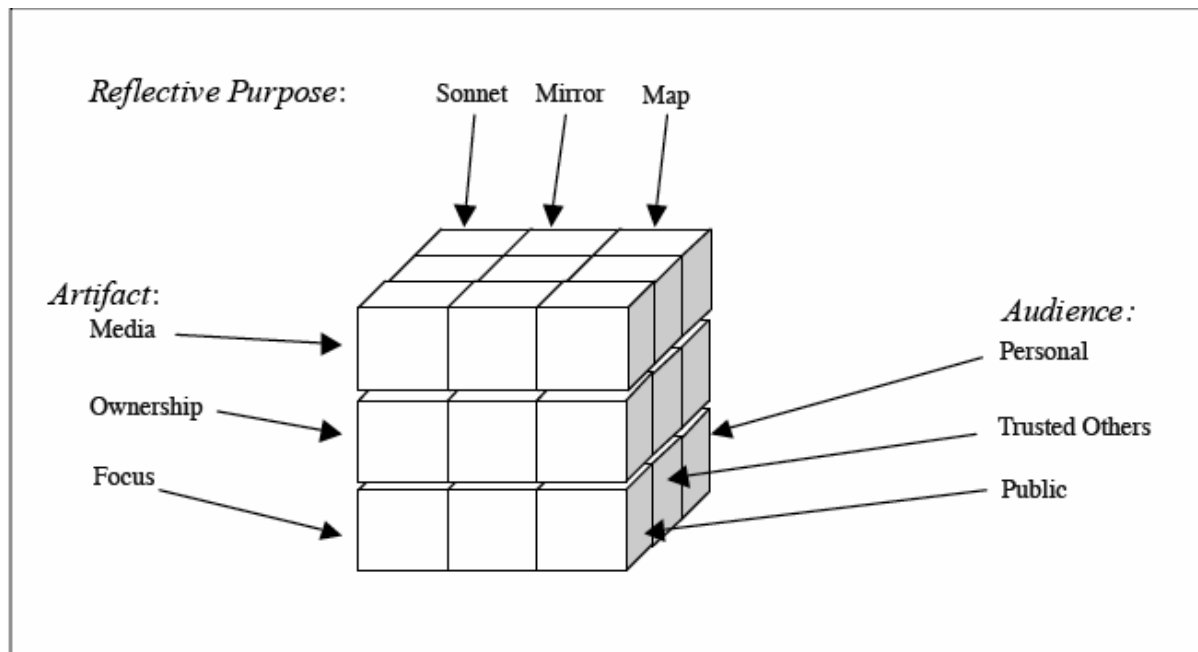
Note: From *Assessing Portfolios Using the Constructivist Paradigm*. Copyright 1994 by F. Leon Paulson and Pearl R. Paulson. Reprinted with permission.

Figure 2: Paulson & Paulson's Cognitive Model.

In another three-dimensional model, Gibson (2004) offers a theoretical framework useful to consider and discuss the dilemmas and decisions inherent in the portfolio process. This framework focuses on audience, purpose, and artifacts. Possible audiences include one's self, trusted others, and a broader public. An author's sense of audience influences the portfolio author's work. Gibson's framework uses Mary Diez' (1996) metaphors of mirror, map, and sonnet to examine portfolio purpose. The mirror refers to the self-reflection inherent in the portfolio process. The map speaks to a portfolio's ability to represent the learner's knowledge,

skills, and abilities and to act as a guide for further professional development. Finally, the sonnet is a metaphor for creativity within a given structure or boundaries.

Gibson (2004) uses the interactions between the dimensions of purpose, audience, and artifact to illustrate questions decision-makers might consider as they evaluate knowledge and practice at both the individual and institutional levels. Gibson offers an example question for each point of intersection. One example, from the intersection of sonnet, trusted others, and focus of the artifact is, “Does the collection provide an image that makes trusted others proud of their investment in the learner?” (p. 97).



Note: From *E-portfolio Decisions and Dilemmas*. Copyright 1994 by David Gibson. Reprinted with permission.

Figure 3: Gibson's 3-D framework of decision-making about e-portfolios.

Assessment Paradigms and Problems. The rise of the portfolio's popularity for assessment purposes has left it caught between paradigms and purposes in conflict. Stiggins (2002) distinguished between “assessment *of* learning” and “assessment *for* learning” (p. 760) and portfolios are currently being used for both. The assessment *of* learning approach is to

aggregate data to compare performance across schools, districts, and states to aid decision makers. The assessment *for* learning approach is to help students learn. Stiggins argued that “the broader the reach of the decision makers (across an entire school district or state), the more weight we have given to meeting their information needs first” (p. 760) at the expense of students who fail in these conditions. He made a plea for an assessment approach that balances these contrasting types of assessment.

Paulson and Paulson (1996) contrasted portfolio approaches as constructivist or positivist with entirely different types of portfolio activities as a result. They offer this explanation:

The positivist approach puts a premium on the selection of items that reflect outside standards and interests. Thus it is appropriate to include tests or test-like representational situations designed by others. Because outside interests and standards are applied, psychometric standards of reliability (especially inter-rater agreement) are emphasized in the judgments made about the products.

The constructivist approach puts a premium on the selection of items that reflect learning from the student’s perspective. Thus it is not appropriate to require tests or test-like representational situations. Because idiosyncratic standards play an important role, less emphasis is placed on consistency of judgments made about the products and more emphasis is placed on the perspectives represented by the judges. p. 36-37

Paulson and Paulson (1991) have also suggested the story as a metaphor for portfolios. “A portfolio tells a story. It is the story of knowing. Knowing about things. . . . Knowing oneself. . . . Knowing an audience” (p. 2). They reiterate the fundamental role of the student as author of the story and lament that other stakeholders become overly involved in the portfolio project. “They meddle with the concepts, they prescribe the standards, they specify the format” (p. 5). These other stakeholders meddle because they have specific uses for the data in mind. The teacher may envision using the portfolio for parent conferences and “district administrators may want something that can be counted, summed, averaged and graphed” (p. 5).

Critics of portfolio assessment (Gearhart & Herman, 1998; Heller, Sheingold, & Myford, 1998; Herman & Winters, 1994; Koretz, 1998; Lettus et al., 2001; Wilkerson & Lang, 2003, 2004; Wolfe & Miller, 1997) have been especially vocal about the psychometric difficulties associated with portfolio assessment citing difficulties with reliability, validity, inter-rater reliability, and the time-consuming nature of portfolio assessment. In contrast to the “portfolio as story” metaphor, Wilkerson and Lang (2003; Wilkerson & Lang, 2004) offer “the portfolio as test” metaphor. They do not dispute the value of the constructivist view of the portfolio, but in a high-stakes environment such as credentialing and accreditation, they argue standards of validity, reliability, fairness, and absence of bias are required to help institutions avoid exposure to litigation. In the context of high-stakes decisions, they stress the need to ensure “contents are rigorously controlled and systematically evaluated” (Wilkerson & Lang, 2003, paragraph 3) and offer eight requirements for tests and caveats for portfolios.

Gearhart and Herman (1998) examined the social context of portfolio development. They found wide variability in how portfolios were implemented and the time teachers provided for students to receive assistance with revisions and artifact selection. Though such concerns are less critical for classroom assessments where a teacher understands the context in which the portfolio was constructed, this social milieu introduces reliability problems for large-scale assessments.

Issues of validity and reliability have been raised repeatedly in examinations of large-scale portfolio assessment deployments (Heller et al., 1998; Koretz, 1998; Murphy, Bergamini, & Rooney, 1997; Stecher, 1998). Koretz (1998) outlined hurdles which included the difficulty of training portfolio readers, establishing validity of inferences, and the varying levels of assistance students receive from teachers and peers. Stecher (1998) focused on the benefits (improved attitudes among teachers, improved communications between parents, students, and teachers)

and burdens (preparation time, classroom time, scoring time) of large-scale assessments, but cautioned the research offered little information about the long-term effects of such initiatives. Heller, Sheingold and Myford (1998) explored portfolio raters' reasoning and behavior to identify threats to validity.

Tool Paradigms. Gibson and Barrett (2002) contrasted two broad types of software to create electronic portfolios: off-the-shelf tools and server-based customized systems. More recently, Barrett (2003) has referred to the highly customized systems as "assessment management systems" (p.7). Key commercial vendors in the field at this time include *LiveText*, *TaskStream*, *Chalk & Wire*, *Eportaro*, *FolioTek*, and *iWebFolio*.

These systems rely on databases, servers, interfaces, and custom programming. Advantages of these systems include computer-mediated communication between portfolio authors and their advisers and a modest learning curve for the portfolio author. Advantages to administrators include powerful data aggregation capabilities to satisfy accountability mandates, rubric generation and dissemination capabilities, and the ability to shift costs to students. Disadvantages include limited ability for the portfolio author's self-expression, startup and maintenance costs for students, and requirements to make all course work available to administrators and accreditors. Proprietary file structures and file formats may limit portfolio portability. These systems inherently carry ethical considerations about student privacy and intellectual property rights that have been largely unexamined in the literature (Batson, 2002; ePortConsortium, 2003; Gibson & Barrett, 2002).

Electronic portfolios developed using off-the-shelf productivity are quite different. Advantages to this approach include greater flexibility for portfolio authors to exercise their creativity, use of familiar tools, lower start-up cost, and numerous options for storage, display,

and distribution of work. Disadvantages include the possibility of cognitive overload among unskilled portfolio authors and difficulties securing the contents of the Internet-hosted electronic portfolios. It is more difficult for administrators to readily generate rubrics and aggregate data to satisfy accountability demands, although custom databases can track assessment data. Several authors (Batson, 2002; Carney, 2002; ePortConsortium, 2003; Gibson & Barrett, 2002) have written about their concerns related to storage, privacy, cognitive overload, conflicting purposes, intellectual property, customization issues, usability issues, and assessment challenges, but there is not yet empirical research examining “assessment management systems” (Barrett, 2005b)

In an effort to balance the needs of institutions and the students they serve, Barrett and Wilkerson (2004) developed a conceptual framework with three systems communicating electronically. These component systems include “a digital archive of student work, a learner-centered electronic portfolio ‘using the learner’s authentic voice’; [and] an institution-centered database to collect faculty-generated assessment data based on tasks and rubrics” (p. 8).

Concerns About Portfolios. Barrett (2005c) is concerned that the accountability movement is destroying the “portfolio as story” in favor of skills checklists. She fears that “high stakes assessment and accountability are killing portfolios as a reflective tool to support deep learning. Those mandated portfolios have lost their heart and soul; not creating meaning, but jumping through hoops!” (Barrett, 2005a, paragraph 4). She is not the first to have concerns about the direction of portfolio assessment.

Shulman (1998) identified five dangers of using portfolios: that they become mere exhibitions, that they are difficult to complete, the consequences of trivialization, the possible perversion of the process, and the possibility of misrepresentation. Paulson and Paulson (1996) were concerned about data aggregation and the impact that would have on portfolios. Based on

that concern, they developed CMAP to offer a way to think about the portfolio and the portfolio context. They also outlined eight guidelines they claim will help to maintain the powerful aspects of portfolios: portfolios offer students a chance to learn about learning; portfolios are done *by* students, not *to* students; portfolios are separate and distinct from cumulative records; portfolios demonstrate a student's activities; a portfolio's purpose may change over time; portfolios may carry more than one purpose, but those purposes must not conflict with each other; portfolios document growth; and portfolio authors need the opportunities to see other portfolios as models (F. L. Paulson & P. R. Paulson, 1991).

Best Evidence Review of the Literature on Portfolios

At AERA, Carney (2004) presented a literature review focusing on portfolio research methodology. In it, she used a framework adapted from Zeichner and Wray (2001), and another from Herman and Winters (1994), to guide her in choosing studies to suggest productive directions for further research. She identified 22 empirical studies; 13 examined electronic portfolios and the remaining nine focused on paper-based portfolios. This final section of the review began as an effort to update Carney's review with work that has been conducted since 2004. The focus is specific to pre-service teacher education as the context of interest.

To expand Carney's (2004) pool of studies for this examination, I used *EBSCOhost* to search the *Academic Search Premier*, *Professional Development Collection*, *PsycINFO*, and *PsycARTICLES* electronic databases for peer-reviewed publications from 1980 to the present. Keyword searches included various combinations of electronic portfolio, digital portfolio, teacher education, and teacher preparation. The term *eportfolio* did not yield any results. These

searches yielded an additional 57 articles for a total of 79 sources to review more carefully. Most of the studies Carney identified as working with paper portfolios remained in the pool.

Next, I reviewed the abstracts to eliminate any papers that were clearly and unambiguously inappropriate for this review. In ambiguous cases, I reviewed full texts. These reviews resulted in the exclusion of 12 studies that were on inservice teachers rather than pre-service teachers; 23 that did not use systematic collection of data; seven anecdotal descriptions, and another 12 that were book reviews, theory pieces, editorials, how-to guides, in another language, or off-topic in one way or another. I also eliminated two more that appeared to have extremely serious methodological or implementation problems. I added two relevant studies cited in other research or discovered serendipitously. The net yield of research studies with some measure of systematic data collection on portfolios in pre-service teacher education programs was 24. These were reviewed using the guide in Appendix B. The remaining part of this chapter offers a review of this literature.

Atheoretical Experience Reports

Twelve of the 24 studies remaining in the pool were atheoretical. Most were experience reports in which the authors detailed the status and progress in portfolio implementations at their home institutions or in their classrooms. Most had the interests of the institution or the faculty at or near the center of their efforts as they explored implementation challenges and successes surrounding portfolio use. Several were pilot studies.

Piloting a Portfolio Initiative. Smith, et al (2001) involved beginning teachers and their cooperating teachers in a low-stakes pilot study to explore developing a standards-based

electronic portfolio that also documents achievement of the beginning teachers' P-12 students. The participants agreed on and discussed a very specific set of guidelines. Only two of the four planned portfolios were completed, in large measure because of insufficient access to and skill using the technology. Despite those challenges, the authors reported optimism on the usefulness of their approach.

Woodward and Nanlohy (2004) offered pre-service teachers the opportunity to create an early draft of a program-required portfolio as part of an elective, *Classroom Computing*. They analyzed six electronic portfolios and interviewed three students who volunteered to participate. The teachers' focus was to learn about the technology skills of the students, how those skills had impacted the task, and the stages students went through as they worked. Their findings underscored the need for careful planning and attention to technology in electronic portfolio implementations.

In an earlier action research study, pre-service teachers created a portfolio for learning as a course project during their student teaching. The researchers were aware of an upcoming state requirement for teaching portfolios and determined to examine the factors associated with portfolio construction that hindered and enabled reflective practice to prepare for the state-mandated portfolio initiative. Researchers examined written reflections from 21 students and conducted eight semi-structured interviews to investigate whether portfolio construction would enhance pre-service teachers' reflection (Borko, Michalec, Timmons, & Siddle, 1997). They identified sharing with peers, support from the cooperating teacher, and support and guidance from the university program as facilitating factors. The hindrances they identified were "more idiosyncratic and situation-specific" (p. 353). Several pre-service teacher participants found the guidelines too restrictive and some did not feel ownership in the project, while others found the

co-occurrence with student teaching problematic. The final hindrance participants identified was how prior experiences in the program caused confusion and conflict for them as they approached this task. Faculty used this feedback to make modifications to their implementation for subsequent cohorts.

Reports on In-house Portfolio Implementations. Loughran and Corrigan (1995) examined science pre-service teachers' views about creating paper-based portfolios. Their intent was to examine students' work habits and understanding of the task to learn whether their notions of portfolios would be reflected in pre-service teachers' practices. Data was comprised of 22 questionnaires and 8 semi-structured interviews. They found pre-service teachers were initially confused about the task and did not find value in it. However, at the end of the year, most students thought the task valuable and planned to use their portfolios in job interviews.

McKinney, Perkins, and Jones (1995) used a variety of qualitative methods to conduct a three phase evaluation of a low-stakes self-assessment portfolio as part of a literacy methods course. Their analysis identified both strengths of and concerns about the portfolio program which they then used to make five recommendations to improve the process and guide future use. Recommendations called for multiple indicators of growth in portfolios, attention to course goals and objectives, a need to coordinate efforts across programs, and more studies in low-stakes environments to examine and refine portfolio use.

In a later study, McKinney's (1998) students began creating electronic portfolios using *Hyperstudio*. Later, only five of the 21 students continued with electronic portfolios when they were given the option to switch to paper. McKinney reported problems with the technology tool including space constraints and frequent crashes. As a result, the portfolio projects in this study could not be extended beyond the initial semester. Results on the survey instrument suggest the

possibility that the five informants who continued with the electronic format were more confident technology users. Despite the technological problems, these students were able to demonstrate a shift to non-linear thinking due to the multimedia capabilities. Not surprisingly, they indicated there was insufficient time for the task.

Piper's (1999) study on electronic portfolios focused on three themes in education reform: professional standards, assessment, and technology skills among teachers. Participants in her study reported limited experience with multimedia authoring software at the outset. Of the five problems these students identified, "lack of time" was most commonly mentioned. Technical difficulties and lab availability also contributed to the challenges these students faced. Just over half of the students had difficulty moving between computers using different operating systems. Also, digitizing their artifacts was problematic. Many of them recognized their lack of experience with computers caused major problems. Students reported a development of computer skills as a result of this experience. They were adequately able to represent themselves in this electronic format. Further, they identified the multimedia aspect of their portfolios as a strength because of the possibilities for personal creativity.

Snyder, Lippincott, and Bower (1998a) focused on the tensions associated with teacher educators' dual roles of supporting the development of their students and assuring the competency necessary for licensure. Originally, the portfolio initiative at their institution focused on a standards-based structure, but evolved to one focusing on student development as they came to believe the accountability focused portfolio was not constructive. Ultimately, they developed a second portfolio allowing students to focus on an important issue of their own choosing. The authors conclude that a single portfolio may not serve well due to the inherent tensions between showing growth and development on one hand and the need to display excellent work for

credentialing purposes on the other.

Winsor, Butt, and Reeves (1999) reported on a collaborative action research project that followed 15 pre-service teachers over three years as they developed ungraded, paper-based, professional portfolios for reflection and self-evaluation. The researchers examined the student experience in stages, identifying themes that emerged early in the program (time, artifact selection); that persisted over the course of the initiative (articulation of development, focused reflection, goal setting, marking achievements); and those that emerged as the pre-service teachers neared the end of the program (recognition of teaching situations, personal nature of teaching, dynamic nature of teaching and professional development).

The studies mentioned in this section examined relatively broad aspects of portfolio implementations. In contrast, Avraamidou and Zembal-Saul (2003) examined how two students' teaching philosophies developed over time and how technology contributed to the task. Additionally, Richert (1990) conducted a small experiment with four different conditions to learn what might aid reflection among pre-service teachers.

Studies Of Broader Interest

In a study addressing the assessment challenges surrounding portfolio initiatives, Baume, Yorke, and Coffey (2004) attempted to understand “why and how do assessors make the judgments they make?” (p. 457). They asked 10 assessors to regrade 53 portfolios for a *Teaching in Higher Education* class. The assessment scheme was complex as there were 75 components of each portfolio. These components fell into three categories: individual elements (where judgment is required to grade); technical requirements (present or not present); and overall assessment.

Assessors provided comments next to their ratings for each component reviewed. This study noted several challenges with assessment. Overall, the assessors in the experiment tended to mark the portfolios with lower grades than the original assessors had given. The authors raised a concern that examining the assessors may well impact the assessments they make. Requiring assessors to provide reasons for their decisions may alter the assessments themselves. The assessment scheme under study required students to pass each outcome in order to pass the course. This requirement magnified the effects of individual outcomes. Although the assessors were using a strict protocol for the portfolios they were grading, some stepped outside the protocol to assign grades based on other factors. The researchers used the data from this assessment experiment to clarify course goals and expectations in areas where the assessors noted ambiguities.

In one of the few quantitative studies in electronic portfolio literature, Beck, Livne, and Bear (2005) conducted survey research (n=207) using a 34-item self-report scale of pre-service teacher professional development. The focus of this study was to examine the effects of four different electronic portfolio curricula. Three of the different portfolio types had professional development as the primary goal, while the fourth used standards-based assessment. The four portfolio types were: teacher development, teacher accountability, reflective inquiry, and reflective inquiry with dialogic evidence. Factor analysis of the instrument revealed five factors: overall teacher development; understanding of backwards planning; benefit of analyzing student work; benefit of teacher peer collaboration; and understanding assessment roles. The authors tested hypotheses to examine: overall benefits to teacher development, teacher understanding of assessment roles, understanding of backwards planning, understanding of the benefits of using student work, and understanding of the benefits of teacher peer collaboration. Their results

indicated that pre-service teachers preparing the accountability-focused portfolio reported lower ratings than those in the other three curricula with respect to understanding of overall benefits of teacher development. The results were in the same direction for understanding of backwards planning and the benefits of teacher peer collaboration. Surprisingly, the accountability-focused portfolio under-performed the other portfolios even on the assessment roles hypothesis. There was no significant difference between any of the four portfolio types with respect to understanding the benefits of using student work. They concluded the accountability-focused portfolio fared the worst overall of the four portfolio types examined and that portfolios should not be used as summative accountability instruments for teachers.

In another study focusing on the portfolio, Derham (2003) developed the Digital Portfolio Assessment of Teaching Competencies (D-PATCO) and investigated the reliability and validity of the measure. In the study, experts in teacher assessment examined the content of the D-PATCO portfolio and found it generally suitable for measuring teacher competence. Derham also examined relationships between D-PATCO and other measures of pre-service teacher assessments such as grades and scores on *Praxis* tests and found theoretically acceptable relationships. However, scoring procedures require additional work and rater training to improve inter-rater reliability.

In a series of publications and presentations, Strudler and Wetzel (2005a; Strudler & Wetzel, 2005b; Wetzel & Strudler, 2005a, 2005b) reported on their case study research (n=6) exploring the context for the diffusion of electronic portfolios in teacher education programs. In addition to examining how electronic portfolios came to be adopted, they also sought to understand how various facets of portfolio programs were implemented. In their interviews of key personnel (administrators, faculty, students, recent graduates, and technical support staff),

they learned that most institutions had substantial experience with paper portfolios prior to implementing their electronic portfolio initiatives. Of the institutions studied, five of the six institutions visited used PT³ grant funding to support their move from paper to electronic portfolios. For four of the six institutions, the impetus for the electronic portfolio implementation was to document meeting NCATE standards. Three of the institutions Strudler and Wetzel visited used a combination of generic tools and templates for students to develop their portfolios. The remaining three adopted a commercially available web-based system or developed one of their own.

Wetzel and Strudler (2005a; Strudler & Wetzel, 2005b; Wetzel & Strudler, 2005a, 2005b) chronicled several recommendations and concerns stakeholders at these experienced portfolio-using institutions shared with them including the need to streamline faculty time for assessment and the importance of access to reliable technology for the purpose of creating portfolios. They also stressed the need to provide access, training, and support for both faculty and students.

Theory in Portfolio Research

Eight of the portfolio studies in the pool addressed theory with respect to portfolio development. Two used grounded theory techniques to build a model or theory. Klenowski's (2000) work, situated in the Hong Kong Institute for Education, used observations, document analysis, surveys, video, and interviews to conduct a grounded theory study of portfolios for both assessment and learning addressing faculty and student perspectives. The intent was to determine pedagogic changes and challenges that resulted from the implementation. From this body of data,

Klenowski identified six principles of portfolio implementation and produced a CD to help others at the institution with subsequent implementations.

Hartmann's (Hartmann, 2003; 2004; Hartmann & Calandra, 2004) qualitative study involved seven pre-service secondary mathematics students from a 14-member cohort as they created compulsory electronic portfolios. He used a grounded theory approach to examine portfolio contents and interviews to build a model of teacher reflection. In addition, he reported information about how the pre-service teachers in his study shared, evolved, and incorporated practices into their portfolios. I will briefly return to his observations in the next chapter.

While Klenowski (2000) and Hartmann (2003) used grounded theory techniques to build their own models or theories, other portfolio researchers used existing theories to guide their work. In a mixed methods study, Senne and Rickard (2004) included a quasi-experimental component to examine the impact of a three-semester development portfolio as measured by a moral/ethical judgments test. There were two groups of nine pre-service teachers at two different universities. The experimental group of nine pre-service teachers created a development portfolio based on cognitive development theory under the direction of the researcher. In the comparison group, pre-service teachers created a portfolio based on 10 categories from a theoretical reflection model. These pre-service teachers worked under the supervision of instructors in a three-course sequence of methods classes. The researchers sought to determine whether the experimental condition would promote professional development. High dropout in the comparison group rendered comparisons across groups meaningless. However, within group gains in the experimental group suggest the potential of the experimental approach to facilitate candidate professional development.

Robbins' (2004) research was specifically focused on reflection and the nature of

reflection as she examined 10 students' electronic portfolios to conduct content analysis. Her analysis was informed by Dewey's (1933) work on reflection.

Sociocultural Frame. Given the collaborative nature of portfolio authorship, the complex acts represented by portfolios, and the diversity of contexts surrounding portfolio authors, a sociocultural framework can be a useful guide for research efforts. Three studies on portfolios have relied on such a framework.

Hoel and Haugaløkken (2004) used qualitative techniques to explore a portfolio approach that involved response groups and collaboration to create learning portfolios. Darling's (2001) interviews of 12 students focused on the student perspective. The interviews were open-ended which gave students the chance to share what they wanted about their experiences. The focus of portfolios in this study was on learning, although two students chose to reframe the task for job-hunting purposes. The portfolio was a major assignment in class and grading criteria were negotiated with the class. Content for the portfolio included some instructor-designated artifacts as well as artifacts selected by students. Informants participated in small collaborative groups as they worked on the task. Through analysis of interview transcripts and video recordings students made for later cohorts, four categories emerged to examine more carefully: initial responses to the assignment; structural and stylistic approaches to construction; overarching themes; and metaphors. Students indicated substantial concerns about the open-ended nature of the assignment in the initial stages. Determining the structure for the task was challenging for many and resulted in numerous trial and error attempts at organization. Students took various approaches to overarching themes. Some wove the theme throughout the portfolio which made it an essential thread. Others added the theme as a visual element, but with no real integration into the content of the portfolio. Still others seemed to distance themselves from a powerful theme.

Finally, some students explored metaphor and analogy as tools to convey the narrative of becoming a teacher.

In another qualitative study conducted over four years, Placier, Fitzgerald, and Hall (2001) used a series of 10 interviews with nine students, field notes from classroom and school observations, interviews with administrators and faculty, and various artifacts including reports, syllabi, assignments, and portfolios to report on the student perspective creating an electronic licensure portfolio. Several students began the process with positive attitudes, but became less positive as time passed. The informants in this study grew tired of reflection, particularly when asked to reflect on the same things over and over. They also spoke of the time and stress associated with producing a portfolio and wondered about the value of the portfolio. The students' focus shifted from the content to completion and "just getting it done."

A Focus on the Tools

Carney (2002) completed case study research examining paper portfolios and electronic portfolios created using off-the-shelf productivity tools. Through a series of thinkaloud work sessions, interviews, and analysis of documents from the institution and the participants' portfolios, Carney made several assertions. In particular, one assertion focused on the importance of the tool in mediating the experience for the pre-service teachers. She stressed the necessity of understanding how tools and people in this setting interact as authors work on their task.

In an extension to her dissertation research, Carney (2002) highlighted six dilemmas portfolio authors face related to creating electronic portfolios and the generic tools and customized systems tools for portfolio authorship. The first three were related to the questions of

purpose and audience for the portfolio. Those include the multiple-purpose dilemma in which portfolio authors may be encouraged to create portfolios for multiple purposes and audiences though the purposes may conflict; personal-revelation dilemma as portfolio authors consider how much to reveal about themselves, their thinking, and their difficulties; the cognitive-overload dilemma that can be associated with a portfolio author struggling to learn to use technology tools while simultaneously focusing on portfolio content.

The last three dilemmas she identified pertain to the question of ownership. Those dilemmas include the self-expression dilemma that some authors feel if they can not exert control over format and appearance; the dead-end dilemma that can arise if the portfolio author lacks ownership of the portfolio files to use their portfolio as a lifelong learning tool; and the data-aggregation dilemma associated with decisions to aggregate data for such purposes as program evaluation and accreditation.

Table 1 summarizes the issues and concerns identified in selected research studies focusing on portfolio development in Teacher Education programs. Studies have focused on both paper and electronic portfolio development.

Table 1: Table summarizing issues and concerns identified in research studies on portfolios.

Electronic?		Assessment issues	Creativity	Content knowledge	Context of portfolio authoring	External influences	Mentoring	Metacognition	Multiple purposes	Ownership	Pedagogical knowledge	Peer interactions	Professional development	Reflection	Self-expression	Technology skill development	Time involved	Tools
	Avraamidou & Zembal-Saul (2002 & 2003)				X			X						X				X
	Barrett (various)	X	X	X	X	X			X	X				X	X	X		X
	Baume, Yorke & Coffey (2004)	X																
	Beck, Livne, & Bear (2005)												X					
	Borko, Michalec, & Timmons (1997)								X	X	X			X	X		X	
E	Britten, Mullen, & Stuve (2003)			X							X					X		
E	Cambridge, D. (2005)									X					X			
PE	Carney (2001)		X	X		X			X	X	X			X	X		X	X
E	Cohn & Hibbits (2004)									X								
	Darling (2001)		X	X						X	X				X			
E	Derham (2003)	X																
E	ePort Consortium (2003)	X								X								X
	Gearhart & Herman (1998)	X			X													
E	Gibson (2004)	X				X				X								X
E	Gibson & Barrett (2002)																	X
E	Hartmann (2003 & 2004)				X						X	X	X	X				
	Heller, Sheingold, & Myford (1998)	X																

Electronic?		Assessment issues	Creativity	Content knowledge	Context of portfolio authoring	External influences	Mentoring	Metacognition	Multiple purposes	Ownership	Pedagogical knowledge	Peer interactions	Professional development	Reflection	Self-expression	Technology skill development	Time involved	Tools
	Hoel & Haugløyken (2004)											X						
E	Klenowski (2000)	X		X							X		X					
	Lyons (1998a & b)							X			X	X	X					
E	McKinney (1998)												X			X	X	X
E	McKinney, Perkins, & Jones (1995)	X															X	
	Paulson & Paulson (various)	X		X		X			X	X				X	X			
E	Piper (1999)		X											X	X	X	X	X
E	Placier, Fitzgerald, & Hall (2001)	X	X	X		X				X					X	X	X	
E	Robbins (2004)													X				
	Shulman (1998)	X		X		X	X			X	X	X	X	X			X	
	Snyder, Lippincott, Bower (1998a & b)								X									
E	Wetzel & Strudler (2005a)								X							X	X	X
	Wilkerson & Lang (2003 & 2004)	X																
	Zeichner & Wray (2001)				X									X				

Summary

In summary, electronic portfolios offer a rich form of assessment for students, but the research base continues to be sparse. Yancey and Weiser (1997) and Carney (2004) trace calls for more and higher quality portfolio research in their work. Carney's (2002) work provides a useful beginning to the examination of the newer web-based database-driven electronic portfolio system. However, a closer examination of actual users and their experiences will be an important addition to the electronic portfolio literature. To date, I have not found any research on these newer tools, although several important initiatives are underway. The research described in this dissertation examined some of the questions surrounding these new tools using the sociocultural framework described in the next chapter.

CHAPTER THREE: THEORETICAL FRAMEWORK: CULTURAL HISTORICAL ACTIVITY THEORY (CHAT)

This chapter describes the Cultural Historical Activity Theory (CHAT) framework employed as the analytical lens throughout this dissertation. Understanding this model is essential to understanding the data analysis and presentation of results in later chapters. This chapter is intended to serve as an introduction for the benefit of the reader rather than a traditional literature review. Readers interested a broader historical review will find Bedny, Seglin, and Meister (2000) helpful. The references in this chapter are reputable representations of a broader set of literature and were selected for their illustrative purposes and explanatory power.

The CHAT model illustrates a set of four tensions and contradictions CHAT theorists see as inherent in activity. These contradictions are important because they typically result in changes or modifications to the activity. Finally, close examination of activity reveals that it is networked in nature. The idea of networks of actors is explored with illustrative examples.

Introduction

Cultural-Historical Activity Theory (CHAT) has its roots in the Soviet psychological tradition—particularly work by Vygotsky, Leontev, and Luria (Barab, Evans, & Baek, 2004). Engeström (1987) built on the work of these central figures, and others, to develop a theory of expansive learning in which learning takes place as a result of activity mediated by tools and oriented toward objects. He defines an activity as the “minimum meaningful unit” and emphasizes that “doing something” involves context and purpose. In other words, the actors in the activity are “doing in order to transform something” (Engeström, 1987). Russell (1997)

describes an activity system as “any ongoing, object-directed, historically conditioned, dialectically structured, tool-mediated human interaction” and offers a family, a political movement, a school, and a course of study among examples listed.

One of the key ideas from CHAT is the claim that knowledge and action are integrated and socially mediated (Engeström, 1987). CHAT theory proposes the idea that consciousness and activity are unified and that intentionality is an important aspect of an activity system. The use of tools fundamentally changes the cognitive actions of the subject. Activity theory has been used to examine language acquisition, play, learning, instruction, work, addiction, and therapy (Engeström, Miettinen, & Punamäki, 1999). It has also been used in the human-computer interaction field (Kuutti, 1999; Nardi, 1996; Tikhomirov, 1999). Jonassen (2002) has suggested “activity theory provides an alternative lens for analyzing learning process and outcomes that captures more of the complexity and integratedness with the context and community that surround and support it” (p. 51). Barab, Evans, and Baek (2004) have proposed that “activity theory might provide an ideal position—one with sufficient scope and depth—for observing individuals at work, alone or in collaboration with others, using electronic tools” (p. 205). CHAT is an appropriate framework for examining the context in which electronic portfolio systems are embedded.

The CHAT Framework

The CHAT framework is depicted in Figure 4. As Engeström (1987) developed this model, his intent was that it met four criteria. He wanted to make a model that was “the smallest

and most simple unit that still preserves the essential unity and integral quality behind any human activity” (p.67). The model must also be dynamic, allowing it to account for change in the observed activity. In addition, he wanted the model to account for the context of the activity. Finally, the model was to account for the role of culture inherent in activity.

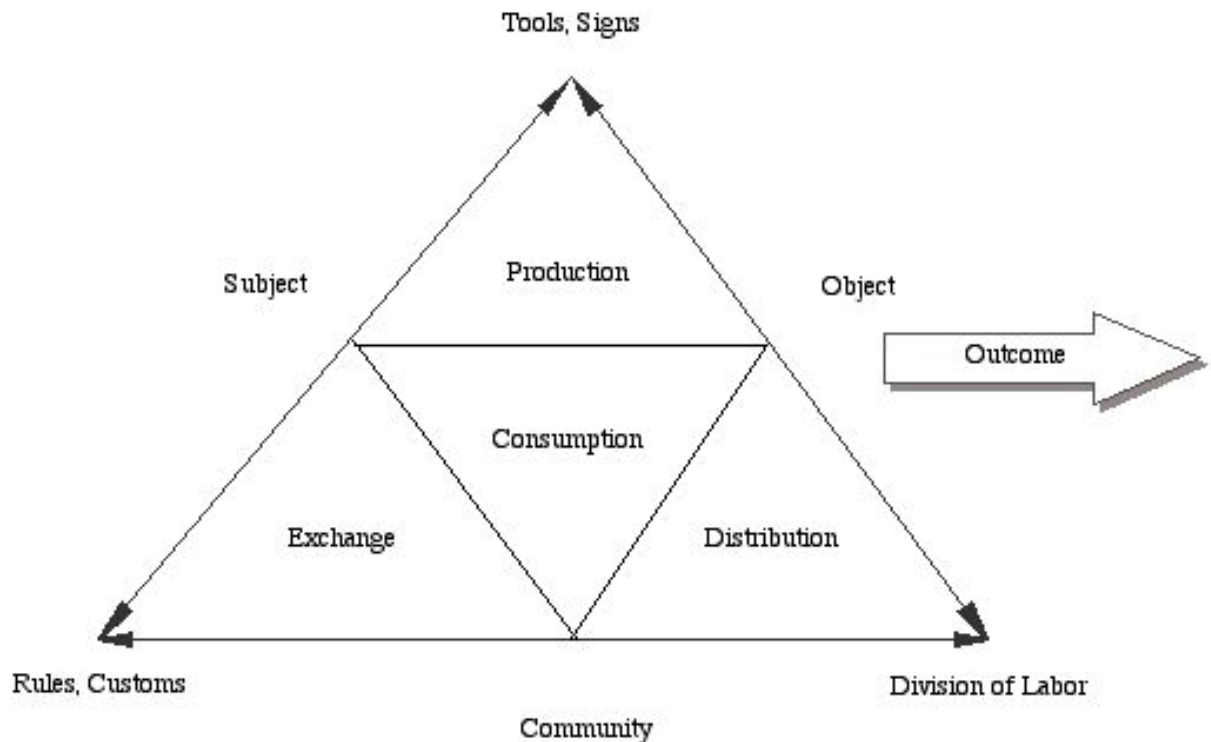


Figure 4. Engeström’s Cultural-Historical Activity Theory model.

The CHAT framework is represented by a series of embedded triangles. The three sides of the largest triangle represent a subject acting on an object while embedded in a cultural community. The nodes suggest interactions between the various components. For example, the subject’s action upon the object is mediated by tools. Similarly, interactions between a subject and the broader community are governed by rules, norms, and customs. Finally, the community

interacts with objects through division of labor. All of these actions and interactions are motivated by a specific intended outcome.

Before applying the CHAT model to an activity system, one must first choose a “unit of analysis.” This unit determines the scope and breadth of the activity to be studied. As an example of varying degrees of scope and breadth, we can look at Engeström’s (2000) work with a Finnish hospital system. The CHAT framework was useful for small, narrow activities such as the interactions between doctors and patients. The CHAT framework also permitted a broader perspective such as the activity of the healthcare system in general.

As I explain CHAT to others, I have used a flashlight metaphor in illustrating the unit of analysis. Activity-theoretical researchers shine a flashlight on a system of interest. The width of the flashlight beam can be adjusted somewhat to determine the scope of the examination. It can be directed to various parts of the activity system. It can be held at a distance to take a broad or longitudinal view. It can be held close to shine a bright light on a smaller area of interest. For this study, I set out to concentrate the beam of light most closely on how the electronic portfolio development tools being used afforded and constrained the intentions of the pre-service teachers as they developed their portfolios. In Chapter 5, my attention was necessarily drawn to other areas of the activity.

Let us examine the nodes in the system more carefully. The *subject* of a CHAT analysis can be a group or an individual. The choice of subject determines the perspective or point of view for the analysis. This subject acts on an *object* which can be many things: a problem space that needs attention, raw materials to be transformed into something else, or concepts one must learn (Center for Activity Theory and Developmental Work Research, n.d.). In many cases, the object is shared with others who are also tending to the same object. The object is integral to the

activity. It distinguishes one activity from another (Leontev, 1981a) and carries the motive, goal, or *purpose* for the activity as a whole. Bedny (2000) describes the goal as “a conscious mental representation of future results of one’s own actions that are connected with a motive. (p. 179). The purpose may change over the course of the activity and, in some cases, those who share the same object may have different purposes (Foot, 2002).

In the CHAT framework, *tools* mediate the interaction between subject and object. Tools can be symbolic (language or writing), tangible (computer or hammer), or psychological (mental model or heuristic). *Community* is located at the base of the CHAT model. This represents the group of people who share the same object. The intersection of community and object is labeled *division of labor*, which can be divided both horizontally and vertically. Horizontal division of labor occurs between community members with generally equivalent status while vertical division of labor is between those with different status. Finally, the interaction of the subject with others in the community is governed by *rules, norms, and conventions*. These can be formal (part of the system), informal (idiosyncratic adaptations by a specific group), or technical (laws, policies, or mandates).

Before proceeding, let us apply the model to the following vignette of a hypothetical student named Julie:

Julie is a pre-service teacher who has made many friends during her time at the university. She recently completed her student teaching experience and must now update her electronic portfolio according to guidelines she received from her adviser, Dr. X. It’s Thursday, and she is meeting her friends for their weekly lunch to talk about their classes and their projects. The conversation shifts to the electronic portfolios that all of the friends are required to complete. Julie confides that she needs to figure out how to edit some video she captured during her student teaching. She tells her friends there is a two-minute section of her tape where the camera is just pointing at the floor. She thought she had turned off the camera, but had not. Now she needs to edit that part of the tape away and has not yet figured out how. Fortunately for Julie, her friend Amy has done this several

times before and offers to meet Julie in the computer lab to show her how to do this. The friends agree on a time to meet.

For the unit of analysis of this vignette, we could use one individual's activity or broaden the scope to examine activities of students across the state as they work to complete their licensure portfolio. For this illustration, let us analyze Julie's activities as she works on her portfolio.

Julie (subject) intends to work on her portfolio (object) to fulfill graduation requirements (one of several possible outcomes). To do so, she uses a handout explaining portfolio guidelines (tool) given to her by Dr. X (a member of her community), her videotape (tool), her computer (tool), and video editing software (tool) to fix the problem with her video. Amy (a member of Julie's community, but arguably a tool for now) helps her with the editing (division of labor) because she agreed (rules, custom) she would when the group of friends (community) met as they usually do (rules, customs).

The work Amy and Julie do together is an example of horizontal division of labor because they have equal status. However, Dr. X. has provided a handout to help Julie with her task. This is an example of vertical division of labor.

Tools: Essential to this Study

Tools and their use to support cognition are central to this dissertation. The following examples from the literature illustrate how the subjects in an activity used cognitive tools to help them successfully complete their activities.

In his work on genres and writing, Russell (1997) uses the familiar—at least in the United States—grocery list as an illustration. He describes how he and his daughter made a quick list of

things to pick up at the local supermarket and used the list as they made their purchases. They discovered their shopping trip went more smoothly as a result of using this simple tool. In this example, Russell and his daughter were the subjects acting on their family's need for groceries (object). They used the grocery list as a tool to make their activity proceed more smoothly. The list served as a cognitive tool to help them remember details about what they intended to purchase on a specific shopping trip.

Barbara Rogoff and several of her colleagues (2002) offer another illustration of tools as cognitive artifacts in their research on Girl Scout cookie sales. They discuss the contributions of the individual girls, their parents and leaders, the Girl Scout organization, and the cookie company. As the girls take orders for the annual cookie sale, they use an order form. Over the years, the form has evolved to facilitate this process. It has space to keep track of orders and a chart to help scouts and their customers calculate the amount of money owed. Columns on the form are color-coded to correspond with specific kinds of cookies. For example, the column for Thin Mint cookies is green. The color-coding is extended beyond the form as well. The dominant color of the individual boxes is green, and the printing on the cases is green. This color-coding helps the girls organize the boxes for delivery. The form also has a column that helps the girls track their progress on delivery and money collection.

Objects: Carrying the Motive for Activity

In a recent special issue of *Organization* focusing on the "Rise of Objects in the Study of Organizations," the editors collected work on objects from a variety of disciplines. In their

introduction, Engeström and Blackler (2005) trace several different styles of theorizing and share two key insights about the importance of objects in organizations.

First, it would be a mistake to assume that objects are “just given”; objects are constructed by actors as they make sense, name, stabilize, represent, and enact foci for their actions and activities. Second, at the same time it would also be a mistake to assume that objects are constructed arbitrarily on the spot; objects have histories and built-in affordances, they resist and “bite back” (p. 310).

Foot’s (2002) work with the Network for Ethnological Monitoring and Early Warning (EAWARN) illustrates how an object can evolve as participants to come to understand it better and how different individuals sharing an object can see it quite differently. She also points out that multiple perspectives impact an individual’s conception of an object.

Engeström and Blackler (2005) also discussed an object’s transience in organizational analysis and used Michael Thompson’s 1979 book, *Rubbish Theory*, to examine an object’s movement through various stages. In essence, Thompson suggested that an object, once produced, might move through a variety of stages: transient, durable, or rubbish. A transient is a good that is in circulation. At the end of its useful life, the good may become something no longer valued (rubbish). In contrast, a durable is something of enduring value, such as fine art. Notably, because a good has rubbish status does not destine it to stay there forever. Something may happen to elevate its status again. An example is an old car that 20 or more years later is prized by a collector. Engeström and Blackler extended Thompson’s *Rubbish Theory* to examine the transactions that can transform the objects, but those extensions are not germane to this project.

One final point about objects that is germane to this project is that objects in one activity system can be tools in another. Of course, the reverse is also true. Let us return to Russell’s (1997) grocery list example. In the earlier discussion, the grocery list served as a cognitive tool

to help Russell and his daughter successfully complete their “grocery shopping” activity. However, Russell also described the family’s “making the list” activity in which everyone carried some responsibility for the completion of that task. The grocery list was posted on the refrigerator throughout the week to provide easy access to all family members. Each was responsible for adding any items they would like to have purchased on the next shopping trip to the list. In the “making the list” activity, the grocery list was the object of everyone’s attention if only long enough to mark desired items. The list moved from object to tool when Russell and his daughter took it into the grocery store to help them with their task. In his account of the family grocery list, the reader learns the list has some archival value because it also serves to mediate disputes about whether or not a desired item was on the list. In the Russell family, there were several conventions in place surrounding the list: 1) if someone wanted an item, they had the responsibility for placing it on the list, and 2) the list was used to settle any disputes that might arise. In contrast, many shoppers class the list as “rubbish” immediately after the shopping trip was over.

Networks of Activity

Another attribute of the CHAT framework is the networked nature of activity. Generally, a central activity has other activities or actions embedded within it. Because these share the same object and outcomes, Engeström (1987) calls these object-activities. In addition, there are often nearby tool-producing activities that focus on creating tools to be used in the central activity. Activities that focus on recruiting, training and educating subjects or potential subjects for the system can be categorized as subject-producing activities. Finally, rule-producing activities focus

on creating rules, policies, and/or legislation impacting the central activity. Typically, these various activities occur in parallel.

The networked nature of activity can be seen in the Russell grocery list example. See Figure 5. Individual members of the family incorporate the list-making activity within their other activities. This is how items are added to the list. One can imagine various members of the family adding items to the list as they realize the needs and wants they have whether it is a new tube of toothpaste or a craving for a favorite flavor of ice cream. Once the grocery shopping activity begins, the list making activity is over—until the next time. The grocery shopping activity begins and the list becomes a tool rather than an object.

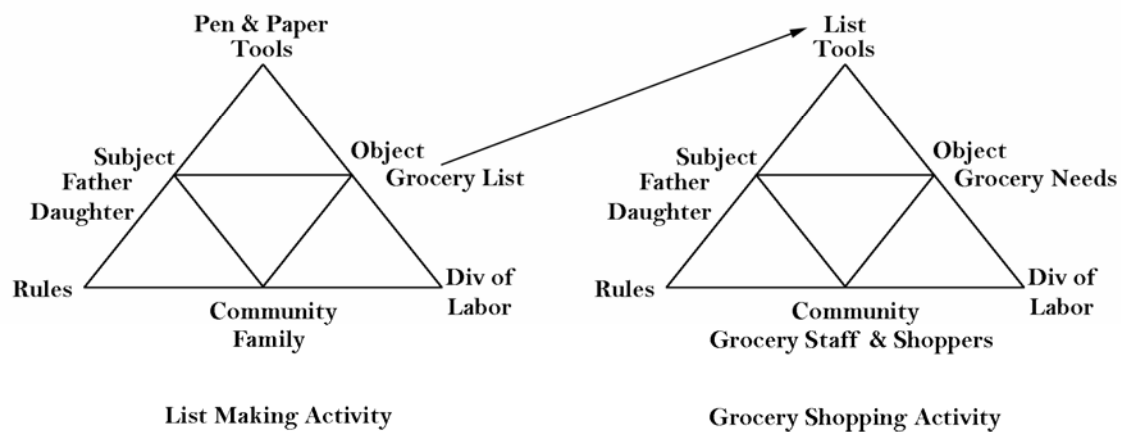


Figure 5. Networks of list-making and grocery shopping activities.

Leontev (1981b) offered the following classic example of early man's hunt to illustrate how a chain of actions and activities directed at a larger purpose make up a central activity. He

told the story of a beater's actions in support of the hunting activity for the purpose of collecting food and furs.

Let us now examine the fundamental structure of the individual's activity in the conditions of a collective labour process from this standpoint. When a member of a group performs his labour activity he also does it to satisfy one of his needs. A beater, for example, taking part in a primeval collective hunt, was stimulated by a need for food or, perhaps, a need for clothing, which the skin of the dead animal would meet for him. At what, however, was his activity directly aimed? It may have been directed, for example, at frightening a herd of animals and sending them toward other hunters, hiding in ambush. That, properly speaking, is what should be the result of the activity of this man. And the activity of this individual member of the hunt ends with that. The rest is completed by the other members. This result, i.e., the frightening of the game, etc. understandably does not in itself, and may not, lead to satisfaction of the beater's need for food, or the skin of the animal. What the processes of his activity were directed to did not, consequently, coincide with what stimulated them, i.e., did not coincide with the motive of his activity, the two were divided from one another in this instance. Processes, the object and motive of which do not coincide with one another, we shall call "actions". We can say, for example, that the beater's activity is the hunt, and the frightening of the game his action" (p. 210).

Activities at the Boundary

Gieryn's (1983) essay on "boundary work" in science analyzed the rhetorical techniques scientists used to differentiate themselves from other intellectual pursuits such as religion and engineering. They have also used these techniques "in a contest for the authority to call oneself a scientist and to claim scientific legitimacy for one's beliefs" (p. 789) to separate science from pseudo-science. According to Gieryn, this demarcation has permitted scientists to justify their claims to authority and material resources. Russell's (1997) work on writing genre discusses how these genres can cross boundaries from one area of writing to another and illustrates this by using an *Intermediate Cell Biology* classroom. In this example, he points to how various writing genres cross the boundaries of the classroom to interact with the university system and the broader

profession. He cites dissertations, theses, research reports, lab reports, transcripts, diplomas, and other written texts as examples of texts that move back and forth from classrooms to external activity systems.

Many of these same texts are part of the pre-service teachers' preparation experience. I suggest that, in many cases, the pre-service teacher's portfolio is another written genre that occurs at the boundaries of the classroom social space, the university space, and the profession's space. The portfolio draws from the classroom activities and also documents the pre-service teacher's excursions into the profession and back. In some states and institutions, the portfolio serves in a gate-keeping capacity so that a pre-service teacher may not cross the boundary from the institution to the profession without completing the portfolio.

Contradictions in an Activity System

Activity systems inherently have contradictions within and between nodes in the system. Activity-theorists do not view such tensions as dysfunctional, but rather as an indication of a functioning system (Barab et al., 2004; Holt & Morris, 1993).

Engeström (1987) describes four layers of contradictions. Holt and Morris (1993) use a retrospective analysis of the *Challenger* shuttle accident in their excellent tutorial on analyzing tensions. Primary contradictions occur within the elements of the activity—or within one node. In the *Challenger* accident, Holt and Morris identified several primary tensions. One was the conflict in the Rules node that put a commitment to “safety first” in conflict with a newer rule mandating 24 flights per year. Sometimes there are tensions between two different nodes of the activity—sometimes called a double-bind. Engeström labeled these secondary tensions. Holt and

Morris identified several secondary contradictions in the *Challenger* analysis. One of them was between the Flight Readiness Review that indicated there was a problem and the decision-makers who were not only trying to put safety first, but also adhere to the aggressive flight schedule. The third layer of tension arises between one form of activity and a culturally more advanced form of the same activity. In the *Challenger* example, Holt and Morris point to a new set of rules that place a higher priority on safety. As the NASA organization became accustomed to the new rules, it was in a state of tertiary tension. The final layer of tension, quaternary, is a tension between nearby activities which Holt and Morris chose not to address in their analysis.

In education research, Barab and his colleagues (2002) used a combination of observations, videotaped sessions, and interviews to analyze a technology-enriched science classroom. Students were assigned to small groups to construct software simulations of key astronomy concepts using 3-D modeling software. The work documents some of the various tensions and networked activities as they appeared in this context.

Contradictions and tensions are important to the activity theorist because they give rise to the “need states” which lead to change as the actors in the network seek ways to satisfy needs the existing activity system can not satisfy.

Changes in an Activity System

As actors in an activity system discover new ways of doing things and bring new techniques from nearby systems, the central activity can change. However, some innovations will not be accepted by other actors in the network and will fail.

Engeström (1987) presents an interesting example from Chemistry. In the late 1800s, chemists organized the elements by their similarities, despite the limitations of such a structure. D.I. Mendeleev was working on his *Fundamentals of Chemistry* textbook and had completed two chapters. His next task was to consider which chapter would come next. According to the account Engeström shares, Mendeleev was planning a game of solitaire when he was inspired to organize the elements by property and atomic weight. Recall that the table is organized vertically by property and horizontally by atomic weight—somewhat like a solitaire game in progress. Although it reportedly took only a short while to reorganize the table once Mendeleev had his inspiration, he spent the rest of his career trying to convince others to adopt this new innovation.

Hartmann's dissertation (2003) and related publications (2004; Hartmann & Calandra, 2004) documents how changes progressed through a cohort of pre-service mathematics teachers creating teaching portfolios. They drew from each other and from nearby activity systems to design, share, and modify new actions to incorporate into their own activities. From my careful perusal of his work, it appears that Reiza-Kendra⁵ included samples of student work in her portfolio and others in the cohort quickly emulated this practice. Paul expanded on her idea to include student work by adding his own twist; presentation of student works in a pop-up window. Further, Tanya-Melanie modified an instructor-provided lesson plan template to include student work (borrowed from Reiza-Kendra) and constructed it to open in a pop-up window (borrowed from Paul). As these various innovations were developed, the pre-service teachers

⁵ Reading across Hartmann's dissertation and two related publications, one finds him referring to what appears to be the same person by two different names. I have hyphenated the two names to share this synopsis involving Reiza-Kendra, Tanya-Melanie, and Paul.

shared those in the peer group. Peer feedback endorsed some of the ideas and models students had and these were subsequently adopted by others. Both Paul and Tanya-Melanie incorporated these new actions by continuing to use them. In fact, five of seven in the cohort used these innovations to some extent.

Summary

In summary, the CHAT framework offers a useful analytic lens to examine the use of portfolios in teacher preparation programs. It provides the freedom and breadth to allow a researcher to look at the “minimum meaningful unit” that *is* portfolio authorship. Like other complex, social phenomena, the portfolio task carries with it a history and culture. Leaders in the portfolio field are concerned about contemporary developments. Tools within the teacher preparation institutions have undergone dramatic changes as portfolios have moved from paper to electronic and now to web-enabled representations. These changes mirror the changes in the broader society. The current social context mandating increasing accountability has served to highlight the boundary-crossing nature of today’s licensure portfolio. Examination of the contemporary portfolio authoring experience benefits from a rich and robust framework to make a significant contribution to the body of literature on electronic portfolios.

CHAPTER FOUR: METHODS

This chapter describes decisions and dilemmas in determining the best strategies and methods to answer the research questions in this study. Important issues addressed include the selection of and justification for a qualitative approach; my role at the research sites; data collection methods including site selection, data management and analysis; and the trustworthiness features of the research. Although the narrative presented in this chapter proceeds linearly, the reality was considerably more iterative in nature.

Considering an Overall Approach to this Study

Marshall and Rossman (1999) discuss three traditional research purposes associated with qualitative methods: exploration, explanation, and description. Qualitative methods are especially appropriate for research conducted where setting and context of the research is important. The face-to-face interactions of qualitative researchers with their research participants facilitate data collection on personal matters including individual experiences, perspectives, attitudes, and values. Additionally, most Cultural Historical Activity Theory (CHAT) research is conducted using qualitative approaches because these methods enable researchers to examine the social system in which the focus of research is embedded which is a critically important aspect of the CHAT framework.

The primary purposes of this study were to explore and describe pre-service teachers' experiences associated with authoring a program-required portfolio under two different genres of systems: a common tools approach and a web-based database systems approach. Qualitative research methods are well suited for these purposes of exploration; therefore, I chose an overall

qualitative strategy. The next task was to select the specific approaches within the genre of qualitative research.

Specifying Particular Research Methods

A number of researchers have posited qualitative research genres (Atkinson, Delamont & Hammersley, 1988; Denzin & Lincoln, 1994; Jacob, 1987). Gall, Gall, and Borg (2003) synthesized this smorgasbord of approaches into three major genres: an individual's lived experience; society and culture; and language and communication. Each broad focus has one or more genres commonly associated with the broader focus. These, in turn, suggest specific methodological approaches in conducting the research.

The first broad approach is a focus on the individual's lived experience. Phenomenological inquiry is a widely known genre associated with a focus on the individual which makes extensive use of in-depth interviews to collect data on the individual experience of interest. Sometimes, participant journal writing offers supplemental data for the researcher's analysis. A phenomenological inquiry into the portfolio authoring task might concentrate on what the task is like for the pre-service teacher, perhaps making an in-depth examination of one student's experience balancing the portfolio assignment with competing priorities of classes, friends, family, and job.

The second broad approach suggested by Gall, Gall, and Borg (2003) is a focus on society and culture. Ethnography typifies this style of research. The culture of interest can be a particular group, a specific program, an organization, or a broader society. Ethnographic inquiry, along with other cultural approaches to research, typically relies on a case study approach,

requiring the researcher to become immersed in the group under study. The case study is another genre that focuses on society and culture. It is one of the most complex strategies and requires multiple methods of data collection. This strategy builds on the worldviews held by participant and researcher alike. Electronic portfolio research that focuses on society and culture might scrutinize the power relationships involved in the electronic portfolio phenomenon and the mandates and policies shaping the movement.

The final focus of Gall, Gall, and Borg's (2003) broad approaches looks at language and communication. Studies conducted with this focus often rely on some type of microanalysis examining speech and other more subtle behaviors. Data for these analyses can include transcriptions, videotapes, and writing. These approaches, taken with the research questions, help to focus the inquiry (individual, group, or interactions) and suggest correspondingly appropriate data collection methods. Electronic portfolio research using this broad approach might focus on and carefully analyze the content of the portfolios—perhaps to examine reflection among pre-service teachers.

For this research, I needed to choose a specific strategy that permitted a focus on the cultural context at two different institutions to answer the research questions. Other considerations in making this determination included whether or not the strategy would be accessible and within my skill set, the anticipated costs, and any ethical considerations suggested by the strategy. A more detailed discussion of methods follows in the next several pages. For now, I wish only to discuss the reasons I chose to use a multi-site case study to collect data. Although a complex approach, the multi-site case study allows interaction with the individuals while embedded in their social context and offers a glimpse into the cultural aspects of portfolio authorship within the individual home institutions. Further, selecting institutions where there was

a pre-existing portfolio component to the teacher education program allowed research in a natural setting without imposing additional treatment on participants.

The inherent complexities of the multi-site case study required flexibility to modify or adapt the approaches as specific situations warranted. Extended immersion in the research sites made it more likely to present challenges to the original design and require slight modifications to the original plans and protocols. In addition, my longer-term presence in the field increased the likelihood of ethical dilemmas.

My previous experience included some qualitative research, but this project would stretch my skills. I proceeded, reasoning that there was no better time to take on a challenging research project than under the watchful eyes of committee members. The next step in considering research methods was to carefully consider my role in the research.

Defining the Researcher's Role

An essential exercise for the qualitative researcher approaching a project is to self-reflect and surface previously held biases and assumptions. This process has a variety of names including epoche, bracketing, self-disclosure, and reflexivity. The results of this exercise were presented at the close of Chapter One.

Patton (2001) describes four dimensions for researchers to consider their role in the research project; participantness; revealedness; intensiveness and extensiveness; and focus of the study. Each dimension can be thought of as a continuum. The dimension of participantness ranges from full participation as a member of the setting to one of observation. My original intent was to primarily focus on conducting observations of the setting and conducting

interviews. However, after arriving at Mason State University, it soon became apparent I needed to participate at least minimally to gain access to the conversations, habits, and attitudes of the pre-service teachers in the setting. This realization led me to follow two strategies to limit participation. The first was to participate only as a last resort. For example, if someone had a question about how to perform a task required for portfolio authoring, I only answered the question if no one else was available. Second, when I needed to answer a question, I limited my answers or suggestions to those I had heard given by staff members. This helped avoid introducing new ideas or suggestions into the activity system. Limiting my participantness at VendorBuilt College was easier because staffing shortages did not present themselves.

Issues of reciprocity seem related to Patton's notion of participantness. Before leaving for the first research site, I considered how the idea of reciprocity might present in the research. I would be willing to help my hosts, but wanted to limit assistance to areas unrelated to the specific focus of the research. For example, proofreading a web page or paper seemed a basic courtesy, but teaching a class about portfolio theory would be "too involved." Reciprocity with participants was a separate consideration. The participants and I would be likely to form relationships that demanded reciprocity. I drew a similar boundary around tasks that were appropriate and inappropriate. I chose not to help them with portfolio tasks or to answer technical questions unless it was unavoidable, something that happened when the lab at Mason State was shorthanded or excessively busy. In a few instances, I saw students struggle to solve problems I could solve, but had not seen anyone share the information that would help. In several of those instances, I made notes about the issue and gave the information after the last focus group interview. I considered whether or not this would be appropriate and decided that sharing it after the last data was collected would not influence the research and would ultimately help the

students. I saw no reason to withhold information these participants specifically wanted, and similarly shared information at the end of my time at VendorBuilt.

Patton's second dimension for considering the researcher role is revealedness. Full disclosure lies at one end of this continuum and secrecy at the other. The research questions for this study did not need secrecy or deceit to pursue investigation. Throughout my participation in the institutional settings, disclosure was complete. During the formal interviews and participant work sessions, disclosure was immediate. During informal interactions, I typically waited until the conversation turned toward my research interests before disclosure. If I believed it was likely I would use specific data from my conversations and observations with an individual, I went through the informed consent process.

The dimension of intensiveness and extensiveness relies on considerations of time. I opted for intensive involvement by choosing to live on or near campus throughout my work at each institution. Generally, I spent eight to ten hours on the campus each day for five weeks. The extensiveness of my involvement was limited to one semester at each institution. While it would have been informative to follow the portfolio authoring experience from beginning to end, I simply did not have the time or resources to pursue this study to that extent.

Patton's final dimension for determining the researcher role is the focus of the study; the range from specific to diffuse. Because the research questions were exploratory in nature, a more diffuse focus was in order. I worked with the point of contact at each institution to ensure access to pre-service teachers working on their electronic portfolios. I also prepared a draft protocol (See Appendix C) to guide the work, but preserved flexibility by conducting observations of opportunity in the labs and by creating the protocol for follow-up interviews near the end of my visit at each institution.

Selecting the Sites and Participants

Now that I had chosen to use a multi-site case study to answer my research questions, the next task was to select study sites. Patton (2001) offers a typology of 16 sampling strategies for qualitative inquiry. His typology includes: convenience, opportunistic, maximum variation, extreme or deviant, confirming and disconfirming cases, criterion, intensity, and typical. Stake (1995) advises researchers to select their case(s) to “maximize what we can learn” (p. 4) and to choose cases that are accessible and hospitable. He stresses that selected cases need not be typical—and often are not. Marshall and Rossman (1999) describe a “realistic” case including the criteria of accessibility; presence of “a rich mix of the processes, people, programs, interactions, structures, of interest, or all of these” (p. 69); possibility of relationship-building; and apparently manageable ethical implications. Rossman and Rallis (2003a) use these same criteria, but call such a site “ideal” (p. 136).

Selecting the Sites

For this multi-site case study, I needed two “ideal” sites: an institution creating electronic portfolios using the common tools approach and another institution using a web-based database system. Following Stake’s advice, my intent was to choose sites to maximize what I could learn in each case. For the purposes of this research, I determined that an institution was eligible as a case if it met the following criteria: it had a mature (longer than one-year) and successful (recommended by an expert in the field) program-wide implementation of the electronic portfolio tool under examination; it required electronic portfolios for pre-service teacher education majors; and it was located in a state in which the NETS-T standards are incorporated

into program requirements. These criteria were based, in part, on those Wetzel and Strudler (2005b) used for their work examining the diffusion of electronic portfolios in teacher education.

Having settled on these criteria, it was time to find analogous institutions. My first strategy was to contact a representative of a popular web-based database-driven portfolio system to seek her recommendation from the company's clients. My decision to contact *CommercialFolio* was based not only on the product's popularity in Florida, but also their market growth throughout the country. I contacted *CommercialFolio*'s Florida representative to ask if she could recommend a *CommercialFolio*-using institution that met the criteria I identified. She gave me the names of three Florida institutions and their contact information. This process helped me identify VendorBuilt College, a private, four-year institution in Florida as a worthy site. I contacted them and arranged a visit to their campus for the Fall 2005 semester.

A bigger challenge was to find a Florida institution using a common tools approach to portfolio authoring. Although my committee members and I were able to find Florida institutions using common tools in portfolio programs, none met the criteria I had set. I began to look outside Florida for my second institution. Dr. Helen Barrett, one of my committee members and an expert on electronic portfolios, recommended I contact Mason State University. I had met one of their digital portfolio leaders at a conference in 2004 and found his descriptions of their program very compelling. I contacted him, asking for an introduction to someone at Mason State who would be able to discuss my research project with me and to approve my visit to the Mason State campus. We were able to work out logistics and concerns, paving the way for my five week visit during 2005 Summer I session.

Selecting the Individual Participants

Once the institutions were identified, it was time to identify individual pre-service teachers to participate. The goal of qualitative research is to form an in-depth understanding of a specific context rather than to generalize across contexts. To do this, different sampling strategies are used. In qualitative research, sampling is often purposive. That is, participants are chosen because they are willing and able to provide important information about the specific setting.

Gay and Airasian (2000) offer two indicators to determine the sufficiency of the sample size. “The first is the extent to which the selected participants represent the range of potential participants in the setting...The second indicator is the redundancy of the information gathered from the participants” (p.209).

For my purposes, I wanted to meet pre-service teachers within the last one or two semesters of the program and from a variety of majors within teacher education. Realistically, I hoped for five or six participants from across the various degree programs at each institution. This seemed a reasonable number to have a mix of informants from the various programs of study. In addition, I needed to balance a desire for more data with the fact that, being the sole researcher on the project, I had to limit the number of interviews to transcribe and analyze to schedule time to observe labs and classrooms. Additionally, I realized I had developed a demanding protocol in terms of participation. I was requesting each preservice teacher participating in the study spend approximately 3.5 hours of their time outside of class for interviews and a work session. This might be especially burdensome for students at Mason State enrolled in an already compressed summer semester.

This collection of preservice teachers would serve as my key informants, but my time on the campuses would offer ample opportunity for supplemental observations in the classrooms and labs to provide additional data. I worked with an institutional designee to identify the most likely sources of participants for my research and relied on the advice of that individual to help me determine the best recruitment strategy for the unique situation at the specific institution.

Selecting individuals at Mason State University. It became clear in early discussions with my point of contact at Mason State that logistical problems with internships, student teaching, and complex scheduling would make meeting students near graduation exceptionally difficult. I worked with her to identify classes where I was likely to find students at the most appropriate place in the program and made plans to visit those classes to explain my project and recruit participants. The final details of recruiting and selecting specific individuals needed to wait until I arrived on campus. I had adopted the primary criterion “to maximize what I could learn” but needed to find out who was available and willing to participate when I reached the campus.

Once I arrived, the institutional designee helped me set up class visits to recruit participants. I wrote an informational overview for the point of contact to distribute electronically. (See Appendix D.) I visited the appropriate classes and asked students to fill out a 3x5 card. I instructed individuals to use that card to let me know if they were or were not interested in receiving more information about participation. I asked for cards from everyone so I would be the only person in the room who knew how an individual responded which protected their identity. Once I had the contact information, I sent an email with additional information. (See Appendix D.) In a couple of instances, students referred friends to me for possible

participation. This method allowed me to get six key informants. Frequent lab and classroom observations provided an abundance of supplemental data.

Selecting individuals at VendorBuilt College. Recruitment at VendorBuilt College was easier, in part because I was visiting in the Fall semester when they offered two sections of two classes focusing on electronic portfolio development. All four sections were taught by my point of contact, so I was able visit the appropriate classes and recruit students in their last semester of coursework before entering student teaching. Following a procedure identical to the one used at Mason State, I asked students to fill out a 3x5 card and instructed them to use that card to let me know if they were or were not interested in receiving more information about participation. Again, I asked for cards from everyone so I would be the only person in the room who knew how an individual responded which protected their identity. Once I had the contact information, I sent the same email with additional information. (See Appendix D.) Again, I was able to select six volunteers from across a variety of programs of study. In addition to the focus group interviews and thinkaloud work sessions, I attended every class and lab work session during the weeks I was on campus to collect additional data.

Setting Boundaries for the Cases

My overall strategy for conducting this research was a multi-site case study. Yin (1994) stresses the importance of setting case boundaries prior to beginning research. For this study, I defined a single case as preservice teachers using portfolio tools during one semester at a specific institution: Mason State University and VendorBuilt College. Within those cases, I explored the

actions and attitudes of numerous individuals –always examining the research questions through the lens of my theoretical framework.

Specifying Data Collection Methods

Yin (1994) describes six sources of data for the case study researcher: documentation, archival records, interviews, direct observations, participant observations, and physical artifacts. Wolcott (2001) delineates data collection in terms of three activities: experiencing which he describes as observing; inquiring which he describes as interviewing; and examining which he describes as analyzing content. Marshall and Rossman (1999) offer their list of four methods: participation, observation, interview, and analysis. I will use Marshall and Rossman's classification as the framework for my discussion, noting that, as much as possible, I limit my participation in the settings.

The overarching research question for this study is "What is the preservice teacher's experience using tools to create an electronic portfolio?" To answer this question, I needed to engage in extended face-to-face interactions with individuals and their social system. These interactions would require interviews—both individual and small group, observations in classrooms and labs, and observations of individual work sessions. Only then would I be able to learn about preservice teachers' perspectives, attitudes, beliefs, dilemmas, work habits, the value they placed on their experiences, and what they thought of their portfolio authoring tools. To understand these complexities within the CHAT framework required multiple methods of data collection and face-to-face interactions. This section outlines the specific details of how I arrived at these choices. Appendix E details the technology tools used throughout the project.

Interviews

Patton (2001) describes three general types of interviews: informal conversations, general interview guides, and standardized open-ended interviews. Informal conversations explore spontaneous topics generated by the conversation. Researchers sensitized to the purposes of the research can, over the course of several conversations, learn about the research topic from a variety of perspectives. A general interview guide serves as a checklist of topics to address in an interview. These interviews permit the participant to answer spontaneously and the interviewer uses the checklist to ensure all relevant topics are covered. Standardized open-ended interviews rely on carefully worded protocols and questions designed to carefully focus the interviewer and respondent. These scripted interviews suggest probes for the interviewer to help elicit data-rich answers from more reserved participants. Standardized open-ended interviews help ensure consistency across multiple sites and facilitate data analysis by collecting answers to standardized questions. Finally, Patton describes a variety of different strategies interviewers might use to combine parts of these three approaches.

Krueger and Casey (2000) write about another specialized form of interview - the focus group. Interviewing a number of carefully selected participants allowed me to gather a variety of perspectives on the portfolio authoring experience. Using focus groups permitted the various perspectives to emerge quickly and also took into account some of the social aspects of this context. Given that I was only able to visit each institution for five weeks, this was an important reason to use focus group interviews in the study.

The focus group protocol (Appendix C) asked participants to imagine and respond to a variety of scenarios (speaking to software developers, advising the portfolio leaders at the

institution). These scenarios were designed to elicit information surrounding the portfolio-authoring task. In addition, my immersion in the field would be certain to stimulate informal conversations, especially in the lab setting and surrounding some of the informal observations.

My plan was to conduct one focus group interview as early as possible in the semester and follow it with another focus group with the same individuals at the end of the semester. I created the second protocol only after collecting as much data as possible. I wanted to use the last focus group to clarify information and interpretations that emerged from the earlier data. See Appendix C for the resulting protocols.

At Mason State University, scheduling challenges made the first focus group impossible to schedule. In the first round of interviews I conducted several individual interviews and a sole two-person interview. I reviewed the questions I developed for the first focus group protocol and used them as standardized open-ended interview questions. At VendorBuilt College, I was able to schedule four participants for the first focus group interview, but two individuals needed to be interviewed separately because of work and family obligations. Because participants had advance notice, we were able to schedule everyone for the second focus group interview at each institution.

All formal interviews were digitally recorded. I transcribed those recordings to text and edited when necessary to clarify meanings. I imported the resulting files into *Atlas.ti*, a qualitative data analysis software package, for later analysis. I used *Audacity* sound editing software to mask the true sound of the participants' voices to protect identity. I saved the original files through the end of the dissertation process, preserving only the filtered files once the dissertation process was complete.

I also conducted numerous informal interviews with a variety of portfolio authors. There were many opportunities for these interviews in the classrooms, labs, and hallways. I took notes using a pen and paper. On occasions where this was awkward, I digitally recorded my recollections as soon as practically possible to preserve details. These handwritten notes and digital recordings were converted to word processing documents, lightly edited to clarify meaning, and imported into *ATLAS.ti* for later analysis.

Observations

To answer the research questions of my study, I considered how I might conduct observations. Observations enable a researcher to notice and record the actions and interactions of those at the research site. Interactions can take place between people and objects or between different people. The social aspect of portfolio creation is an important element of the CHAT framework, as was participant interactions with the authoring tools. I chose to conduct at least three types of observations: classroom observations, lab observations, and thinkaloud work sessions.

Classroom observations allowed me to glimpse the interactions between faculty and students and to learn how the portfolio project was presented to preservice teachers at each institution. I heard the questions students asked about the portfolio process and observed interactions among students and between students and faculty. During these classroom observations, I recorded notes and drew diagrams documenting what I saw and heard.

Both Mason State University and VendorBuilt College provided labs where students could work on their portfolios. When I was not conducting an observation or interview, I spent

my time in the portfolio support computer labs at Mason State University to watch students work with each other and with the portfolio authoring tools. Often, I would introduce myself to these portfolio authors, telling them I was conducting research on portfolio creation and asking their permission to sit next to them and watch while they worked. As students became more familiar with my presence, they would greet me and sometimes sit down to talk to me. Our conversations usually turned to their portfolios. Staff members at Mason State frequently invited me to observe portfolio consultations. Other times, I would notice someone working on his or her portfolio and introduce myself, asking permission to watch. Inevitably, I was able to engage them in a conversation. Lab time was designed into the classes at VendorBuilt College and I visited those lab sessions when I was at the site.

During these informal conversations in the labs, I would usually ask the portfolio authors what they were trying to accomplish at a given moment, what they were thinking about as they worked, how they made decisions, and what they planned to do with their portfolios in the future. Most students needed very little prompting to give me detailed answers to my questions. I took notes as we spoke. These observations of opportunity, along with my classroom observations, provided much of the data for subsequent chapters.

However, I also wanted to ask students to think aloud during a work session and a thinkaloud protocol was too intrusive for the public computer lab setting. To collect this type of data, I asked the formal participants in my study to meet with me for an hour-long thinkaloud work session. We met in a private study room in the library. At Mason State, laptop owners brought their laptops with them, borrowed one from a friend, or checked one out from the library. At VendorBuilt College, we used a study room and my laptop and mouse. I put a digital video camera on a tripod behind the participant and focused it solely on the screen. The

individuals wore a lavalier wireless microphone. I instructed them on the thinkaloud protocol and they worked on a task they chose for approximately one hour. That evening, I captured the video on an external hard drive of my computer. Later, I applied a filter to alter their voices.

Document Review

The final data collection method in this study was document review. Document review permits a researcher to learn more about the history and context of a research setting by supplementing interviews and observations with documents and communications produced as an everyday part of the context. The most significant advantage of document review is that it is non-intrusive and non-reactive, but the sheer volume has the potential to be overwhelming (Marshall & Rossman, 1999).

I collected documents in each of three categories: institutionally-generated documents, student work aids, and student portfolios. Institutionally-generated documents describe the portfolio initiatives, document requirements, and offer guidelines for the preservice teachers at an institution. These documents included student handbooks, informational websites, and items posted in the labs, and for courses. Student work aids included notes and diagrams students brought with them to assist in their portfolio efforts and temporary documents they created as they worked. Finally, I saved copies of student portfolios at various stages of development. All documents were saved in an electronic format for later analysis.

Considering the Ethical Implications of My Research

Qualitative researchers must carefully consider the ethical implications before entering a research site (Marshall & Rossman, 1999; Patton, 2001; Rossman & Rallis, 2003a). Doing so helps to sensitize oneself to ethical issues that may arise in the course of the fieldwork and to develop a plan for handling ethical dilemmas that may surface. Rossman and Rallis discuss three ethical issues they characterize as “generic to qualitative research” (p. 73): privacy and confidentiality; deception and consent; and trust and betrayal.

Privacy and Confidentiality

The adoption and implementation of electronic portfolio systems is an important issue in most schools, colleges, and departments of education. The pressure for accountability is driving adoption and implementation of systems and raising concerns about pedagogical soundness (Barrett & Carney, 2005; Snyder et al., 1998a). Given the interest in this topic, I thought it important to protect the confidentiality of the institutions who agreed to let me visit their campuses and talk with their students. There was no way of knowing what I learned on their campuses and I reasoned that these portfolio leaders deserved to continue refining their program initiatives until they were ready to disclose their programs and any research that had been conducted on said programs.

Student confidentiality was also an important consideration in this research. At the time of this publication, some of the students I interviewed and observed are still enrolled at their respective institutions and are vulnerable to professors and administrators who may or may not be happy with what the students revealed to me. Others have recently graduated and have just

started their first jobs in their new careers. To help them feel comfortable speaking to me, I promised to use pseudonyms to protect their individual identities and to alter their voices and to blur their images on any audio and video recordings.

Deception and Consent

Informed consent is foundational to conducting ethical research today. Many researchers must struggle with decisions about deceiving their participants to effectively examine the research questions being studied. This study did not present those struggles. The research questions did not suggest deception, and the study would not have been well-served by deceptive practices. Even observations in the computer labs would not have benefited from covert observations because the observations without the supplemental insight gained from the interviews would not be meaningful. This study did not use deception.

Prior to beginning the Institutional Review Board process at UCF, I chose to complete all of the online modules in the Collaborative Institutional Training Initiative (CITI) Program's Course in The Protection of Human Research Subjects. I hoped to gain additional insights for the institutional review process and time spent at Mason State University and Vendorbuilt College.

Drafting the informed consent letter prompted me to consider a number of important factors to include in the letter. The full letter is available in Appendix F. Following is the description of the informed consent process I used to interact with research participants.

I visited selected classes to introduce myself and my research. I explained that I was interested in researching the student perspective as they work on their electronic portfolios and invited them to share their experiences with me. I took special care to describe the protocol for

the thinkaloud work session because I anticipated few students would be familiar with it. I also highlighted how I would try to protect participants' identities since I would be making both video and audio recordings. I also wanted participants to know how I would preserve that data, how I would use it in this dissertation, and my plans to make future publications and presentations. I explained that I was offering a small compensation to those who participated in the research to demonstrate my respect for their valuable contributions and the time they would invest by their participation. Of course, I also explained that participation was voluntary and that they could freely withdraw at any time. I answered any questions they had and provided my email address so they could contact me privately if they had additional concerns they did not wish to ask in public. I instructed them to contact me by email if they were interested in participation. If I was contacted, we scheduled a time to meet for the first interview where I again explained informed consent and presented them with the requisite form to sign. At subsequent sessions, I did not collect another informed consent form, but reminded them that their participation was voluntary and asked if they had any questions before we proceeded with our work session or interview.

The informed consent process for observations and associated informal interviews was more flexible. Generally, I introduced myself by name and told them I was a doctoral student from the University of Central Florida researching student perspectives and experiences with electronic portfolios. I asked if they minded having me watch them work. I typically watched what they were doing and listened to what they were saying to see if they confirmed or disputed information I noticed. Because they were in the lab for the purpose of getting real work done—sometimes on a deadline—I did not want to interrupt them with the full-blown informed consent process unless I permanently recorded their data. As soon as I realized an individual offered a

new or unusual insight or perspective, I introduced the informed consent form and asked if they were willing for me to include them in my study under a pseudonym.

As most qualitative researchers know, asking others to participate in one's own research raises the issue of reciprocity. The formal participants in my research study spent three and one-half to four hours of their personal, discretionary time to participate. In some instances, they made special plans to arrive on campus to participate. I recognized that participant compensation is controversial; however, it was important to me that I honor participants' time commitment by offering some compensation. I chose to offer \$10 to participate in each focus group interview or thinkaloud work session and \$5 to complete the online survey. I estimated I would pay them \$10 per hour for their participation. This was the current rate for UCF students working on campus. My hope was that the participants would recognize this compensation as a token of my appreciation for their generous gift of time, but that they would not be overly incentivized to participate. Dickert and Grady (1999) recommend the wage payment model as the least likely to unduly influence potential participants.

Trust and Betrayal

I knew the promise of confidentiality might raise ethical dilemmas later. However, I did not think it likely that my interview protocols and observations would surface criminal activities or put me in a situation where I had a strong incentive to disclose participant identities. I did not imagine it likely that I would learn of anything worse than student cheating and did not anticipate any problems with respect to betrayal or trust. Before entering the research sites, I worried that research participants might come to see me as someone with expertise in the area of portfolio

authoring and might ask for advice on their work. I very much wanted to avoid the role of advisor or technician. Avoiding that latter role proved to be difficult.

The other area that concerned me was negotiating my exit from the research sites. I had spent several hours with the formal research participants and even longer with a few of the informal participants. They had disclosed their feelings, attitudes, and experiences to me. I did not want to abruptly leave once I had collected the data from them. I had formed several reciprocal relationships. As the time for my exit drew closer, I made it a point to thank them for their participation and to remind them that, at the beginning of our time together, I had promised not to contact them after the research was over. I did not want them to feel I had abandoned them because I had gotten what I wanted and suggested that if they wanted to preserve our new relationship, they could send an email and I would respond.

Issues of Power

I would be remiss if I did not mention issues of power in this study. The Teachers College or Education Department is compelled to collect certain data from and about students to satisfy accreditation requirements. Both institutions I visited had elaborate systems for recording and managing the collected data: one was developed in-house and the other supplied by a vendor. Professors at both institutions were required to structure their courses and assignments to ensure the required data was collected from students. In turn, the preservice teachers were required to create electronic portfolios to graduate from the programs I visited. They received explicit guidelines about what was appropriate to include and based their decisions on the advice they received from their professors and the lists of requirements at their institutions.

I designed this study to give voice to the students who are at the bottom of this power structure. I hope the students feel empowerment having the opportunity to share their stories, experiences, insights, and frustrations. Several students responded positively to my appearance at their institution. Tucker sent an email after our first interview in which he said, “Thanks for doing this research. It really makes me feel like someone cares about how the students feel about all this.” It is my hope administrators at the institutions and at the accrediting bodies will hear what these preservice teachers have to say.

Methods of Data Analysis

Analyzing collected data is an iterative process. Yin (1994) offers two general analytic strategies: relying on theoretical propositions and developing a case description. Within those, he suggests dominant modes of analysis including pattern matching, explanation building, and time-series analysis. Miles and Huberman (1994) provide an extensive treatment of strategies and tactics the qualitative researcher can use throughout a study: the early stages of data analysis (including coding, memos, and sequential analysis); exploring and describing; explaining and predicting; ordering and explaining; and drawing and verifying conclusions. Throughout their work, they emphasize the representation of data.

I chose to use Creswell’s (1994) “data analysis spiral” (p. 142) to organize this discussion of data analysis methods. The spiral image conveys the researcher’s repeated visits to and trips through the data. The entry point to the spiral is data collection with an account, in this case a dissertation, at the exit. Between these end points, the researcher passes through a number of loops to make meaning from raw data. While the following description conveys some degree of

linearity to the process, this is misleading. In reality, I would move back and forth between the different loops of the spiral as I worked with the data collected.

The first loop is data management. In this loop, researcher efforts focus on organizing data to facilitate retrieval and preparing data for analysis. Planning for this phase started before data collection and relied on Yin's (1994) three principles of data collection: use multiple sources of evidence; create a case study database, and maintain a chain of evidence. The first principle, multiple sources of data, was incorporated in the research design. The remaining two principles were addressed in the data management strategy. I chose to use *ATLAS.ti* computer software designed specifically to support qualitative data analysis to serve as the project database. *ATLAS.ti*'s memo capabilities would also provide the "chain of evidence" Yin suggests.

I determined an organizing structure for my computer hard drive to ensure files would not be misplaced. I ordered additional external hard drives for my computers after designing a meticulous backup strategy. During my time in the field, I transcribed notes and interviews, converting audio files into text files. Discipline to transcribe each day helped to preserve the integrity and accuracy of the data so I would not lose details. I captured electronic copies of portfolios as students developed them, and scanned select written documents to analyze later. I created a project file in *Atlas.ti* and imported the converted files, assigning them to the project and making notes about when the work was transcribed and summarizing the contents of the file. I implemented the backup strategy I designed, backing up data files each day and hiding the external drives in my closet hoping, in the unlikely event my computer was stolen, my data would remain. When I returned home from the research site, I shipped one backup of the data using a commercial service and transported another in my car to insure at least one would make

it safely home. During the analysis phase of this study, I kept one backup drive in my home and the other in a separate and secure location. Every few weeks, I updated the second backup with the newer files.

The next loop in the data analysis spiral is reading and memoing. This phase involves reading and re-reading the collected data, making notes about emerging themes and insights, noting interesting developments for further investigation, and forming initial codes. While I was still at the research sites, I began to read and re-read transcripts and notes after they were transcribed. I used the memoing feature of *Atlas.ti.* to record and manage those memos and gradually began some very tentative first drafts of coding.

The foci of the next stage entailed description, classifying, and interpreting. For this study, I described the computer labs visited, focusing on the equipment, sights, sounds, and temperature. I visited the labs when they were empty and when they were bustling. I sat in different places to try to make sure every detail was noted. I listened to the quiet and listened to the sounds of students using the labs. I walked around the room looking at what was displayed on the walls, and noticed patterns of use by counting and observing. I mapped students interacting with each other, and tried to describe some of the people so the reader could picture them at work. Based on what I read, focus began on themes, patterns, and recurring ideas or language, identifying codes in harmony with the CHAT framework. I coded the data using *ATLAS.ti.* (See Appendix G for additional details on the coding process). It was in this phase that I began to reduce the initial volume of data as the nuggets were examined and the rest set aside. To identify the important data, I re-read the coded data for the various themes within the context of the field notes, interview transcripts, and work session transcripts. From that reading, I identified and reported recurring ideas and themes. Where I found it, I reported disconfirming

evidence and reviewed coding to look for more evidence either confirming or disconfirming findings. I used related nearby themes to elaborate on data from the initial theme to amplify understanding of the findings.

Interpreting the data took longer. To begin the interpretation, I identified changes in the portfolio activity system and re-examined them to identify the tensions within the activity system that appeared to motivate those changes. I also reviewed transcripts and field notes to find instances of student discussions of these conflicts within the system. Eventually, the bigger picture began to emerge and meaning developed. I noticed additional patterns of conflict and reviewed major portions of the data looking for more evidence to either confirm or disconfirm my analytic impressions. I discussed the data with “critical friends” who acted as sounding boards and challenged interpretations as necessary (Costa & Kallick, 1993; McNiff, 2002).

Finally, in the last loop of the spiral, I began to focus efforts on representing and visualizing the data. It was at this stage that I could write the narrative and tell the stories of those watched and interviewed. From my numerous readings of the data, I have attempted to tell the story of the preservice teachers’ experiences working on their portfolios and what was observed at the two institutions visited. Throughout the telling of that story, I have used their words in an effort to remain true to their experiences.

Assessing the Quality of the Research

The quality of traditional scientific research is determined by measuring it against standards of objectivity, validity, and reliability, but these measures are not appropriate standards for all research. In fact, Patton (2001) asserts that judgments regarding quality, and criteria to

judge quality, depend on the purposes of the inquiry and the perspectives of the audience. He offers four additional sets of quality criteria to suit different perspectives and a variety of philosophical frameworks. These include (a) social construction and constructivist criteria examining trustworthiness, authenticity, triangulation, and reflexivity; (b) artistic and evocative criteria addressing the issues of creativity, aesthetic quality, and interpretive vitality; (c) critical change criteria in which the researcher takes an activist stance to empower participants and identify inequalities and injustices; and (d) evaluation standards and principles in which utility, feasibility, accuracy, honesty, and fairness are valued.

Guba and Lincoln (1989) propose credibility, transferability, dependability, and confirmability as criteria to examine the trustworthiness or rigor of a qualitative research study. They also recommend strategies to enhance the conduct of a qualitative research study. I have incorporated as many of those recommendations as possible and to the best of my ability.

Credibility refers to whether or not a study is believable. Prolonged engagement at a research site, triangulation, and member checks are strategies to enhance a study's credibility. I chose to immerse myself at the research sites by living on or staying near each campus for five weeks. While the study could have benefited from a longer engagement, the lack of external funding limited my time and budget. I designed triangulation into the study by collecting multiple types of data from a variety of sources as well as the analytic triangulation provided by research participants through the member checks. In fact, the member check is one of the most important steps I have taken to enhance the credibility of the analysis in this dissertation. The participating preservice teachers were the first to see my analysis and to offer feedback. Patton (2001) refers to this practice as "review by inquiry participants" (p. 560). This type of review is

one method of analytical triangulation and has helped ensure that my analysis is accurate and fair.

To conduct the member check, I sent an electronic file to each participant, requesting their feedback about the accuracy of my observations and analysis. The file contained the Introduction chapter to acquaint them with the entire work; an abbreviated version of the CHAT chapter to introduce them to the theoretical framework, and the final two chapters reporting on and analyzing what they told me. I sent one final reminder after asking for their reviews. The total time they had for review was just over a month. At Mason State, only Gabrielle responded. Given that at least two of the students had graduated and started their first teaching jobs, it is possible I might not have current contact information for them. Gabrielle responded that she was satisfied with what she had read and had “nothing negative to say.” Three students from VendorBuilt responded. Cathy offered a suggestion to further clarify some background information about Phoebe, but was otherwise satisfied with the report. She said “it was funny to see myself through someone else’s eyes. I do seem like quite the socialite party planner, don’t I?” Mallory responded, saying “Wow! You paid really close attention to everything. I think you touched on just about everything—things I never thought about.” She was a little concerned she might not have made some of the points she wanted to make as well as she might have liked, but did not respond to an invitation to clarify specific quotes.

Transferability refers to whether or not the findings from one setting are applicable to another setting. One inquiry cannot make that determination. However, including rich descriptions can help readers determine the applicability of these findings to their situations. Qualitative researchers must select what to observe when they are in the field. Observing a specific event or interaction necessarily blinds you to other events or interactions occurring at the

same time or in another place. During the time at the research sites, I reminded myself to pull back and focus on writing the descriptions readers would need to understand the contexts of Mason State University and VendorBuilt College.


Dependability is the next standard Guba and Lincoln (1989) propose. This refers to the rigor of the processes used throughout the research project. While it is true that qualitative research emerges, I hope the detailed disclosure of the processes used and the considerations I made in my deliberations will enhance the dependability of this study.

Finally, Guba and Lincoln (1989) offer the standard of confirmability when speaking of the quality of the results. This criterion speaks to the evidence a researcher offers to support interpretations and claims made in the study. These claims can come from the literature or the participants of the study. To give the students I interviewed a voice in this research, I have made extensive use of direct quotations and recordings of them talking about their experiences. As I share this data in the next chapter, I offer the participants' own words to confirm my analysis or make your own sense of the meaning.

CHAPTER FIVE: DESCRIPTION

This chapter describes the portfolio-related events and conversations during Summer I 2005 semester at Mason State University and Fall 2005 semester at VendorBuilt College. Patton (2001) and Wolcott (1994) stress the importance of providing description before beginning analysis and this chapter offers the description necessary to begin the analysis. Analysis and interpretation is reserved for Chapter 6. The separation into different chapters helps distinguish the matter-of-fact description from the subjective interpretation and analysis.

The narrative begins with a broad overview of the institutions and the task assigned to the students. This context helps the reader understand the larger picture of teacher preparation at the institution and how the portfolio initiative fits into the broader program. From there, the discussion is organized around the CHAT framework, providing specific details of events and discussions related to the CHAT framework.

One of the central principles of a CHAT orientation is to notice changes to an activity system. Those changes will be described in this chapter with analysis in Chapter 6. These changes will be flagged with a special symbol . In Chapter 6, readers of the electronic version of this dissertation will find a hyperlink returning to the original descriptions.

Overview of Mason State University's Digital Portfolio Program

Mason State University is a large public university. The Teachers College has between 3000 and 4000 education majors currently enrolled. Students who have declared majors in education are counted in either their discipline-specific college or the Teachers College,

depending on where they are in their program of study. For this reason, informants can only estimate the number of education majors. Their estimate places enrollment between 3000 and 4000 students. Portfolio support staff believes there are 970 incoming Freshmen who have declared a major in education for Fall 2005 semester.

The portfolio leaders at MSU have designed their initiative to satisfy the demands of NCATE accreditation. Their system, *Rubigrade*, was designed and built in-house. Initial development was funded by a PT³ grant and began in the 2000-2001 academic year. Education majors at MSU are enrolled in numerous different colleges and leaders have designed a portfolio and assessment system they believe flexible enough to meet the needs of their students in various disciplines and colleges. *Rubigrade* accommodates both an open-ended web page model and a template-based web page model. In programs using the “open-ended” web page model, students begin with a blank page. From that starting point, they add text, images, links, and additional pages as their wants and needs demand. Students enrolled in Secondary Education programs use this approach. In contrast, other program faculty chose to provide templates that offered a starting point for students containing portfolio structure, navigation, prompts, and minimal graphical elements to guide their portfolio development. During Summer 2005, most students in special education, music education, and elementary education programs began their portfolio projects with program-specific templates.

Students at Mason State create their portfolios using a wide variety of software tools. Professors and instructors typically introduce students to the free, downloadable Netscape *Composer* for web page editing. Students are free to choose and use other products, including

Macromedia *Dreamweaver* and Microsoft *Word*. All students at MSU have 100 MB web space⁶ to use throughout their time at MSU. Teachers College students I interviewed hosted their digital portfolios on that space; however, *Rubigrade* was designed to allow for other hosting options.

Rubigrade allows professors and instructors to create and use rubrics for assessments. Rubrics are aligned to NCATE, ISTE and NETS, INTASC, and state competencies and standards. Individuals can create customized rubrics for one specific assignment or develop program-wide rubrics for use across a department or college. Evaluators can simultaneously view the artifact they are grading next to the assessment rubric. At the evaluator's discretion, completed assessments can automatically be emailed to students. Other evaluators choose to have students log in to the system to check their grades while others provide feedback in ways that do not involve *Rubigrade*.

At MSU, students creating their digital portfolios have a variety of resources to use for their portfolio authoring task. Education majors are required to purchase a laptop with wireless card. MSU technical staff recommends three different models from a single vendor and arrange discount pricing for both hardware and software. Students are also required to purchase three-year extended service plans for their laptops. Information to purchase the hardware, and information for financial aid if necessary, is widely disseminated in registration literature through the Dean's office and during summer orientation.

⁶ At the time of this study, students had 100 MB of web space. There was a widespread belief that allotment would increase to 1 GB with some speculation it would be 2 GB in the very near future.

Students receive both hardware and software support through the Hardware Hut, (see Figure 6), located on the ground floor of Teachers College. Common support issues include basic troubleshooting, wireless card configuration, configuring email, software installation and updates, and answering questions about commonly used software. From 7:30 am to 4:30 pm, the Hardware Hut is staffed by people knowledgeable about MSU's digital portfolio initiative and the required laptops. They provide support in person, over the phone, via email, and through audio or video chats.



Figure 6. Hardware Hut is located on the ground floor of MSU's Teachers College.

Teachers College has several computer labs available for students, faculty, and classes to use. One lab is used for Educational Technology class meetings but is typically staffed and available for student use when no classes are in session. Teachers College also has two wireless laptop labs available for use during classes (See Figure 7.)



Figure 7. Dr. Price looks on as students in his class use one of two wireless laptop labs in Teachers College at MSU.

The portfolio support lab, where most observations and informal interviews were conducted, is also housed in Teachers College. The portfolio lab is open from 8:00 am until 9:00 pm Mondays through Thursdays and 8:00 am to 5:00 pm on Fridays during the academic year. For the summer, the lab closed at 7:00 pm. This lab was equipped with five Macintosh G4 computers, 20 eMac computers, and three iMacs that are several years old (See Figure 8.) There are three empty lab tables at the back of the room. These tables have network connections and AC power to accommodate laptop owners who bring their own laptops (See Figure 9.) Lab visitors can print to a networked laser printer (free 20 prints per day, but this rule does not appear to be enforced). A student assistant from University Computing Services performs simple troubleshooting, writes up service requests for equipment, and oversees a collection of external floppy disk drives, scanners, and digital cameras students can checkout by leaving their student identification card.



Figure 8. Students work in the portfolio support lab at MSU.



Figure 9. Laptop area in portfolio support lab at MSU.

MSU's Digital Portfolio Facilitator, Linda, oversees the lab and the student assistants who work in the lab. Linda's office is located directly off the portfolio support lab. She, or one of the student assistants, is available most hours the lab is open. Student portfolio assistants work in the lab and keep a sign saying "Portfolio assistant available here" so visiting students can find them easily. When professors want in-class support, Linda or one of the assistants visits the lab or classroom to help. If Linda is not in a meeting, visiting a class, or assisting a student, she is

available in her office. Signs on her door welcome students to ask her for assistance (See Figure 10.)



Figure 10. Sidelight on MSU's digital portfolio facilitator's office door with welcoming messages and hours for portfolio help.

At Mason State University, portfolio requirements are integrated into many of the classes throughout the program. The required portfolio, and template if applicable, is introduced in the first education class students take. Although specific details vary depending on the program, students' digital portfolios are generally checked at the end of the first year, the end of the second year, as they begin student teaching, and at graduation. Students use the INTASC principles as they develop their portfolios. By the end of their time at Mason State, they are required to have two artifacts for each of the 10 INTASC principles. (See Appendix H.) They must also include reflective statements with these artifacts and a rationale for each artifact. Students at Mason State have a lot of latitude in choosing the artifacts they put in their digital portfolios. Course syllabi often suggest appropriate portfolio placement for major course

projects, but students are free to place artifacts as they wish. They may also use a single artifact for multiple portfolio entries provided they are able to tie the artifact to those standards.

After student teaching, preservice teachers take a *Reflection* class in which they create two paper portfolios. The first is a compilation of artifacts from student teaching which students draw from to create a second interview portfolio. Neither of these portfolios is converted to digital form.

Overview of VendorBuilt College's Electronic Portfolio Requirement

VendorBuilt College is a small, private college in Florida. Enrollment totals just over 2,000 students, with approximately 200 students in the Department of Education's seven certification programs. VendorBuilt must satisfy the accrediting requirements of the state of Florida and the Commission on Colleges of the Southern Association of Colleges and Schools.

Professors in the Department of Education have designed their initiative to comply with requirements set forth by the Florida Department of Education. Student portfolios align with the Florida Educator Accomplished Practices (FEAPs). Initial portfolio efforts focused on paper portfolios. Four years ago, VendorBuilt decided to pilot a move to an electronic portfolio solution and selected a web-enabled database subscription service provided by *CommercialFolio*. One of the key factors influencing this decision was the presence of the FEAPs, and other standards, in the vendor solution. Three years ago, this decision was finalized and all students were subsequently required to use *CommercialFolio*.

Students purchase a three-year subscription to *CommercialFolio* for \$99. In addition to the *CommercialFolio* service, they also have three years of access to high-quality educational

video content available on the Internet. Students may renew directly with the company for \$60/year when their subscriptions lapse.

CommercialFolio requires Internet access for students to work on their portfolios. Dr. S, VBC's Portfolio Coordinator and a professor in the department, created a template for all students to use as they build their portfolios. The template includes instructions for each section of the portfolio. A typical page includes a picture, instructions to place a specific artifact and rubric, instructions for writing a reflection, and faculty-selected standards corresponding with the designated project. See Figure 11.

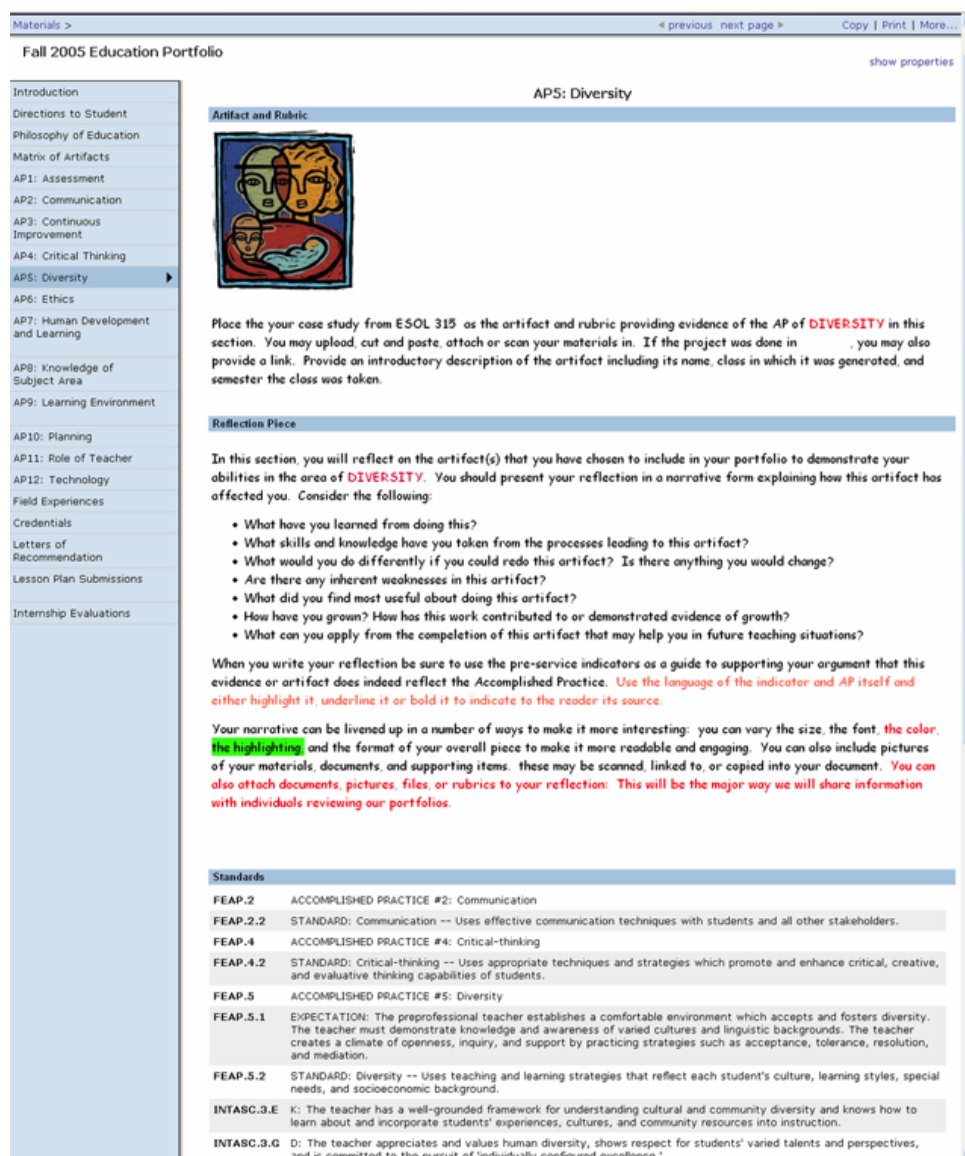


Figure 11. Diversity page from VBC portfolio template illustrates template contents.

In addition to creating templates for students to use as they construct their portfolios, *CommercialFolio* allows evaluators to develop and use rubrics to assess assignments and students to view completed assignments. In addition, students can share work with professors and peers and review comments and feedback.

At VBC, new students take a two credit-hour *Electronic Portfolio Development* course designed to introduce them to the portfolio and associated requirements, learn to use the

CommercialFolio tool, and begin constructing their portfolio. Initially, this course was optional but it has recently become a required component of the VBC curriculum. Students are also required to take a *Professional Development Seminar* course the semester prior to student teaching. Since the implementation of the *CommercialFolio* portfolio, most class time has focused on completing the graduation portfolio required to proceed to student teaching and graduation. Both classes meet twice a week for 50 minutes. Classes are held in a computer lab located on the second floor of the library. This lab also serves other departments across the college. It is equipped with an instructor's multimedia station and ceiling-mounted projector, two network laser printers, two flatbed scanners, and 26 Dell computers. See Figure 12. It is available for general student use when no classes are meeting. Students are charged for printing.



Figure 12. VBC computer lab where portfolio classes meet.

In addition to the classroom lab, students can visit the *CommercialFolio* lab located near education department faculty offices. This lab has three computers, three flatbed scanners, and three inkjet printers (See Figure 13.) The *CommercialFolio* lab is generally locked, but students need only ask one of two professors for a key to the lab. The room is small and also used for

departmental storage and filing. Finally, there is an open access lab in the library building that serves the entire campus. A work-study student monitors the lab but has limited technical expertise as most work-study students are not specifically familiar with the *CommercialFolio* initiative. They monitor the lab, fill the printers with paper, and periodically straighten chairs. During the Fall 2005 semester, I saw little portfolio activity in this lab.



Figure 13. Maria at a computer in the *CommercialFolio* lab.

The college's technical support staff maintains computers, printers, and scanners. Students have a toll free number to call for *CommercialFolio* technical support. Students in the portfolio classes ask Dr. S for help with their project during class, via email, and during her office hours. There are no other formal hardware or software support mechanisms in place for students who frequently turn to more knowledgeable peers for assistance.

Most professors teaching a course with a required portfolio artifact consistently include it in the course. However, most do not require students to upload the artifact into the *CommercialFolio* system as part of their course. In fact, several encourage paper submissions and provide their feedback on paper. Students are responsible for uploading artifacts and

scanning the associated rubrics on their own or during the *Professional Development Seminar* class.

At VendorBuilt, students are required to have a splash page introducing themselves to a portfolio reviewer, their teaching philosophy, and twelve artifacts supporting the FEAPs. Eight of the artifacts are required and must be placed in specific locations in the portfolios. Students are permitted to select four artifacts for the remaining portfolio sections.

To understand these rules, one must understand the data collection demands the Florida Department of Education (DOE) places on VendorBuilt's education department. Students are required to have three artifacts for each of the 12 FEAPs. Typically, the DOE's rules prohibit students from using the same artifact as evidence in more than two accomplished practices. VendorBuilt negotiated with the DOE to allow one artifact to serve as evidence in three areas. They did this to reduce the number of artifacts in student portfolios. Because of the careful decision-making about artifact placement and coverage of standards, faculty are concerned that allowing students to move artifacts or change artifacts would upset the delicate balance they've achieved.

Saturating the CHAT Framework

One challenge in writing about the CHAT framework is to take a complex topic and parse it into smaller sections for linear presentation. The distinctions are blurry and the end result is unsatisfactory. Nevertheless, presentation of the data is required and this section of the chapter attempts to present the complexity of the portfolio authoring activity in linear fashion. The section will proceed through the nodes of the CHAT framework, saturating it with data from

both Mason State University and VendorBuilt College. Each section contains highlights of some of the important similarities and differences in the findings at the institutions. At the conclusion of the chapter, I present a discussion of the production/consumption sub-systems of the activity system under study. This paradox was often on students' minds. Since the focus of this study was the experience of preservice teachers, we begin with the Subject node of the framework.

The Subjects

The main research participants at each institution offered a variety of perspectives including elementary education, social sciences education, and art education. I also spoke with several students majoring in Exceptional Student Education (ESE) at VBC. Unfortunately, the reduced summer program at MSU constrained access to students from some of their programs. For example, I only briefly met a few ESE majors and even fewer music education majors.

On the whole, students at Mason State University are more diverse than their peers at the smaller VendorBuilt College. This difference is most striking when looking at their ages and the associated responsibilities that come with different life stages. Students I met at Mason State ranged in age from their early twenties to their early forties. Their counterparts at VendorBuilt were all in their early twenties and preparing for the first careers. VendorBuilt College's mission is to focus on the traditional undergraduate, so research participants are consistent with the student body in this respect. Demographic differences among the subjects lend little insight in terms of understanding the portfolio activity at these institutions.

Students had a broad range of technology skills. Only the least skilled technology users seemed to struggle substantially more than their peers, although several students spoke of

struggles. Fortunately, volunteers to participate in this research included the most skilled technology users at both institutions. Their participation lends insight into how the various tools afford or constrain the portfolio authoring experience as the tools are pushed to their limits. Most students seemed to have adequate technology access at home and those lacking availability in their living quarters had ready access to campus technology resources, although a lack of Internet access was sometimes problematic for students at VendorBuilt.

The next section introduces the participants in this study. Note that excerpts with a blue microphone have corresponding audio files. Green icons indicate that a short video clip is available to see work by the preservice teachers represented in this study. Understanding the participants' concerns and knowing more about their portfolio task and challenges offers useful insight as you continue to read this chapter.

David at MSU

David is in his first semester at MSU. He is majoring in Secondary Education in Social Sciences and is a transfer student from another university in the state. He is a non-traditional student preparing for his third career. He is in his late forties, with a wife and children at home. Throughout the summer, David's schedule included a large block of time between classes. He spent much of that time in the seating area of a food court in a nearby building. The area was large, sunny, and comfortable, with many tables and wireless Internet access. He did a lot of work at the first table on the far right.

David considers himself comfortable with computers and technology. He is not concerned about learning to use his new iBook computer. In fact, by the end of the first week of classes he says that his switch to the Macintosh is going pretty well. I asked David, "As you approach creating your portfolio over the next two years, do you have any concerns about the project?" He shares his answer in Multimedia 1.



Just that it's going to be fast paced, 'cause I'm only here two years. Most people have four years to do this and since I'm a transfer student, I have two years to do this so I have to work twice as hard and that's just, you know, I'd say it's a hurdle in front of you because I have to work twice as hard and twice as fast as someone else that just came here. But it's a challenge for me because I've been in the service and I know I've had challenges and I'm used to challenges and it's just how you go about gittin' to it.

Multimedia 1. David shares his early concern about the digital portfolio project (00:41).

Adah at MSU

Adah is an Art Education major. Originally, she was planning to major in Graphic Design, but decided to pursue a double major instead. In addition to her teaching portfolio, she is required to create an art portfolio in a five-inch binder. Considerations about combining the teaching and art portfolio—and how she might merge the two—occupy much of Adah’s portfolio-related thinking over the summer. At least one of her friends discouraged her from pursuing this idea. She has not been in Teachers College for very long and only recently started her digital portfolio. She still struggles with the form it should take and also with writing reflections, although throughout our interviews and work session, it appears she is highly reflective. Adah explains in Multimedia 2.



Well, you’ll see later when you take a look at my portfolio that I try to avoid just sticking stuff in there for the sake of having it in there. My professors were nice enough to kind of let me slide by with that for the due date because – like I said – my reflections are very, very short – it’s just very concise. I didn’t want any fluff in there. I guess that’s kind of the complaint I’ve been saying all along is that the standard for the reflections just seems too long for the content. Yeah, I’ve spent a lot of time thinking about this and I don’t know if I’m an average teaching student in that way, or if it’s because I just recently switched over. I never wanted to be a teacher – ever – until half a year ago and so I’ve really put a lot of thought into it. So luckily, that’s kind of come out and I can put something down that’s meaningful to me in this short amount of time.

Multimedia 2. Adah speaks about writing reflections and her switch to teacher preparation (01:14).

Monica at MSU

Monica is preparing to be a secondary English teacher. In addition to being a student, she is also a wife and a mother. At age 25, she “felt the younger kids seem to be more aware of laptops and portfolios and this, that, and the other thing. So I felt a little outdated, I guess.”

During the first interview, and in Multimedia 3, Monica also explained that the digital portfolio requirement was only one piece of the larger experience at Mason State.



....the whole teachers program – this is just a facet of it, I guess. I thought it was – when I came into it – I thought it was the most important thing: we had this digital portfolios requirement and it had to be done. And this is what we had to acquire to do well in this college and do well as a teacher. And now, especially since I’ve gotten older and wiser I guess, I don’t think that way anymore. Not just because of this semester or because I’m in college. Altogether, the whole teachers program is really just a huge benefit. I think it’s not them saying “we’re doing this because we want to put the best teachers out there. We want to show them that, with all this work that you do, you’re doing the work, you’re making the grade, this is how you do it.”

I think they really care about, you know, getting really good solid teachers out there – about really showing they know this information because 1) they want to know and 2) (not that they’re required to) I think they value us as students - in the Teachers College, at least I can say that. I think they really do. I think it’s just a part of the program. I don’t think it’s the entire - which is what I used to think - the thing you had to do – I no longer think that. I think it’s just kind of “Wow! This is another benefit.”

Multimedia 3. Monica discusses portfolio requirement at MSU Teachers College (01:21).

Tiffany at MSU

Tiffany is an Elementary Education major entering her Junior year. She started the program before students were required to purchase a laptop. She is primarily a *Windows* computer user and felt uncomfortable working on the Macintosh computers in the Teachers College. However, her concerns were not limited to changing computer platforms. Throughout our first interview, she spoke about a desire for more support throughout the portfolio authoring experience—particularly with publishing to her web space. Tiffany would have liked more time in class to work on her portfolio and would also have liked to work with a friendly, patient teacher assistant at her side. Tiffany spoke of visiting the portfolio support lab and turning to friends for help. Tiffany also takes some of the responsibility for her challenges. She explains in Multimedia 4.



I just feel like I was kind of pushed into it and told, “This is what you’re doing and this is what needs to be done.” And like I said earlier, it could be a million different reasons – I wasn’t paying attention, I had a bad professor, other professors might have been a little bit more proficient at that. But I just felt like I was shoved into this scenario. I’ve figured it out because I kind of meet challenges. That’s just who I am. I like to figure things out and do it.

Multimedia 4. Tiffany takes part of the responsibility for her challenges (00:22).

Gabrielle at MSU

Gabrielle is in the Secondary Education program and is majoring in Social Sciences. The summer semester is her second semester of portfolio authoring. For her, it is important that she creates a portfolio that represents her well. She is also cognizant of the size limits of her web space and uses the space judiciously. In the first interview, she makes it clear that she thinks working on her portfolio is fun and that she spends a lot of time on it. She explains where she spends her time in Multimedia 5.



I think the hardest part for me was finding background pictures for it. I could fill it up with content all day long, but finding the right picture – because you want it to look professional, but yet not boring. You want to keep them interested so it's really hard to find something like that. So if you see a picture you like, I would just keep it – background pictures for the background of your page. Mine are green. Green is my favorite color and I want my portfolio to represent me, so I have a lot of green textured backgrounds. And you want to make sure the font you have is easily readable by all different types of people: ones with learning disabilities, those without, those that can't see, all sorts of things.

Multimedia 5. Gabrielle explains the hardest part of the portfolio authoring experience (00:51).

Sarah at MSU

Sarah had just completed student teaching when I met her during the summer semester. She was in the first cohort of students required to create digital portfolios at MSU and had a tough time of it: hard drive crashes, server space issues, broken hyperlinks, failed backup disks, and bad advice. Now hiring principals seem disinterested in reviewing the fruits of her labor. As she heard Gabrielle speak of her experience, Sarah was pleased to learn that some of the problems she had faced seemed to have been resolved for those starting just two years later. Despite her setbacks, Sarah is sympathetic to the challenges the portfolio leaders and professors at MSU confronted as they tried to implement the digital portfolio initiative and continued to add to her digital portfolio throughout the summer. Listen to Multimedia 6 as Sarah talks about the challenges of implementing changes in education.



I understand. I've been in schools and I know that to make changes in education, it's like trying to change a flat on a car without ever stopping. You still have students coming in in August, you still have to keep that ball rolling, and the changes are going to be made over time. Just like it's taken four years for this problem to be fixed, eventually they're going to benefit from the struggles that we went through.

Multimedia 6. Sarah describes the challenges of implementing changes in education (00:24).

Amanda at MSU

Amanda is also an Elementary Education major. She is uniquely knowledgeable about creating digital portfolios at Mason State because she has worked with in the digital portfolio support lab for over three years. Students in Amanda's cohort were not required to create digital portfolios. Nevertheless, she decided to create one because she was working in the portfolio lab and thought the experience would be valuable. She also uses her portfolio as an example when she works with students who come in for assistance. Amanda was not required to purchase a laptop. Even though it was optional, Amanda decided to purchase one of the MSU recommended laptop computer systems. She explains in Multimedia 7.



Actually, I was not required to get the iBook. I think I got this about a year ago when my *Windows* machine crashed. I figured this would be the *most* beneficial, not only to take to classes, but also so useful to take to student teaching....to just hook it up to the projector and use the *PowerPoint* like it wasn't a big deal.

Multimedia 7. Amanda explains why she bought a laptop computer (00:30).

Astra at VBC

Astra is a senior at VendorBuilt College. Her program of study calls her a triple major: Secondary Education, English, and Special Education. In addition to her course work, she has worked two part-time jobs. Like others in her cohort, she believed she would be making a paper portfolio when she started the program. She saved all of her papers in preparation for that portfolio, but was less attentive to saving the electronic files she created to generate them. At some point in her career at VBC, she lost all of the electronic files and spent hours of her time throughout the Fall 2005 semester scanning her papers into an electronic format. Astra was in both the beginning and senior portfolio classes. The first class wasn't required, but she and her adviser belatedly realized she might benefit from it. In Multimedia 8, Astra talks about the value of the first portfolio class for students who are earlier in their program of study.



From my perspective, it's a very useful tool. Because I'm doing it so late, and I didn't have the chance to start it earlier like the rest of my class – either one of the classes I have – I think it's more difficult for me to get everything together. I know a lot of my classmates don't know where some of their stuff is, but they'll be able to find it easier because they do have electronic formats for everything. Whereas, I'm trying to put everything in by paper. It's kind of frustrating, in a way, because it's almost as if everybody else has everything perfect already – even though I know they don't – and it's kind of like I'm lagging behind everybody else. And that's frustrating because you want to know that you are even with everybody so you can actually do everything everybody else is doing and follow along with what's going on in class. Where as right now, I'm kind of “What's the splash page?”, “Oh!”, “What do you mean, share pictures?”, “Oh!” kind of thing. And that's kind of aggravating. 'Cause, being in the nine o'clock class, I'm the senior student and I should know how to do things and I don't.

Multimedia 8. Astra describes the value of starting the portfolio process early (01:12).

Mallory at VBC

Mallory is an Elementary Education major and wants to work with primary grades students. She has wanted to be a teacher since she was a child and has been working with young children at her church and while she was enrolled in a childcare vocational program at her high school. Her goal is “to be an amazing teacher—the kind who my students will never forget....” She also hopes to teach in the Honduras and has already started the application process to do so.

Throughout the semester, Mallory makes it clear she has spent time thinking about how to use portfolio assessment with her future students. She explains in Multimedia 9.



We talked about it in classes, like alternative assessments and portfolios is a way to doing that. I’ve thought about doing this in classes because it is kind of fun to make – you start with this blank grid, basically, and you make this whole thing. I think kids would really like it and it teaches them a lot. But I almost – I don’t know how all electronic portfolios are, but since *CommercialFolio* is online, like I think it would be a cool thing to do if it was incorporated into an elementary classroom – to have it as a software so that you could make something and burn it and the kids could have a little CD of their portfolio, rather than a subscription to an online service.

Multimedia 9. Mallory talks about using portfolio assessment with future students (00:38).

Phoebe at VBC

Phoebe is majoring in Social Sciences Education. Throughout her program of study, Phoebe feels she has received less information about the required portfolio than most of her peers in the Elementary Education program. She, and the other Social Sciences majors, has difficulty reconciling the published portfolio requirements with her personal experiences. In the first weeks of the Fall 2005 semester, Phoebe confronted her challenges and her frustrations with the portfolio requirements. These were evident in our first conversation, and Phoebe chose to close the interview by explaining that she is going to wait to see what she thinks of all of this at the end of the process. (Listen to Multimedia 10.)



I'm not really this hostile towards it. I mean, right now thinking about it and all the experiences I've had have been negative only because I have nothing to show for it yet. But I think when the time comes that I'll get to present it in front of somebody and hopefully get a "well done" or "that looks great" - then I'll think, "Well, I do feel proud that I was able to use this technology and to put in all of my work and I can see it all in one place and it is appreciated." So, I think that, right now, I personally am very hostile towards it and angry that it deletes everything or it doesn't work and the font's not the right way, but I think that you have to wait for the full picture at the end and see.

Multimedia 10. Phoebe explains her "wait and see" attitude (00:48).

Anne at VBC

Anne is majoring in Elementary Education and Exceptional Student Education. Although she will have certification to work with elementary students, her preference is exceptional education, specifically autistic children. She has an artistic nature and uses some of her own art in her portfolio. Some of her friends are graphics designers and web page developers and Anne turns to them for advice on implementing some of the ideas she has for her portfolio. She has dabbled in web design on her own and explains her experience in Multimedia 11.



I would think there's a handful of people – there's a website called *MySpace* – and it's a relatively new web site and it's becoming more popular. It's taught a lot of our generation HTML. So that's how I learned HTML is through creating my own profile on this web site called *MySpace*. It has my pictures and links to different web sites that I like and it has an interests box and I get to pick my background. So I think a lot of it has been influenced – my preferences on *CommercialFolio* have been influenced by what I've already created on *MySpace*...and I know how to do backgrounds and I can't do that on *CommercialFolio*....and I think I'm getting really frustrated.

Multimedia 11. Anne talks about how she has learned HTML (00:51).

Tucker at VBC

Tucker is an Art Education major. Originally, he hoped to work with high school students upon graduation, but his practical experiences have convinced him he will be more satisfied working with elementary students. In addition to his artistic endeavors, Tucker enjoys working with computers and software. He does most of his portfolio work on his own computer because he built it, he knows what is on it, and he has all the tools he needs for the task. With or without the portfolio requirement, Tucker believes he would have made an electronic portfolio. During our first focus group interview, Tucker spoke about the importance of artists maintaining a portfolio and also the benefits of the digital format. In Multimedia 12, Tucker shares an anecdote about how his art portfolio helped legitimate his artistic pursuits in his father's eyes.



Essentially, the purpose of a portfolio is to show people – not only employers, but also friends, relatives, everybody...anybody you know – let people know what you're doing. I remember, my brother got married last summer and while we were all at the hotel, a day or two days before, my cousin and I both kind of set up in one of the hotel rooms – a little display of our art. Both of us had brought a portfolio along and we'd set it up for all of our relatives to see. And at that point, my dad finally looked at it and said, "Wow! I actually understand that you're *doing* something." And especially in that sense, with art, not everybody understands that when you're making art, you're actually doing something. Some people think of it as just play or just fun – and – and – sometimes rightly so. It is a lot of fun. It is a lot of play, but with education as well, we're not just creating lesson plans for our own benefit. We're creating lesson plans, management plans, tests, everything, essentially for the benefit of our future students. And it's important to show everybody that what we're doing has meaning.

Multimedia 12. Tucker shares an anecdote about his father and his portfolio (01:48).

Cathy at VBC

Cathy is an Exceptional Student Education major and committed to teaching ESE students. She has always wanted to be a teacher and one of the first things she tells those who review her portfolio is that she “was more content with grading papers than playing with the other kids at recess.” Her younger brother inspired her to teach students with special needs and her goal is “to become a teacher who exercises tolerance and patience for the needs of all students, no matter what they may be.” In the first focus group meeting she raised one of the most important issues to understand as you continue reading this chapter. Listen to Multimedia 13 for her explanation.



I think unfortunately for us, we were in the transition period. During our sophomore year, it was when they decided everybody had to do electronic portfolios. That's when it was really finalized that that's what was what was going to happen. I think a lot of the students that are younger than us, like the kids who were freshmen and sophomores now, *are* getting the benefits of some of the things we wish we would have had. Like now they're requiring a portfolio class for all education majors that I just took because I didn't know what the heck I was doing in my portfolio. So last year, I was like, “Oh, I probably should learn that” and I took the class.

I took the class just because I felt like I was going to need it, not because it was required. And now they're requiring it which I think has helped, like *so* much. The kids are going to get into the class we're in now – the *Professional Development* – and they're going to have everything in. All they'll need to do is fine-tune it. That's what I'm doing now. I have so many of my artifacts already in there that I'm really using this for fine tuning, for writing reflections, and trying to remember what I was thinking when I wrote the lesson three years ago - that sort of thing. But I think that a lot of the things that we have trouble with are because of the time that we were at. It was mostly because we were at the transition and we didn't start out this way.

Multimedia 13. Cathy explains being caught in the transition (01:38).

Object

For the research questions in this study, the “smallest meaningful unit” holds the portfolio as the object. However, in interviewing preservice teachers at both institutions, some of them did not see the portfolio as a meaningful object. In those cases, they tended to see their graduation as the object of the meaningful activity. When one holds that perspective, the portfolio creation process is one of the actions nested in the larger, and in these instances more meaningful, activity. I will return to this idea later in this chapter. For now, I will proceed with the CHAT framework holding the portfolio as the object.

Multimedia 14 is a movie tour of a selection of digital portfolios created at Mason State University. These portfolios represent the variety I observed while at MSU. Students in some programs (Elementary Education and Special Education) started with a template provided by the institution. Students in Secondary Education were not provided a template and created their portfolios “from scratch.” Multimedia 14 shows some portfolios created under each condition.



DESCRIPTION: This video is an on-screen tour of a collection of digital portfolios at Mason State University. The transcript and associated figures can be found in Appendix I if you are unable to play this video.

Multimedia 14. Video showing the variety of portfolios created at Mason State University (04:32).

VendorBuilt College uses a commercially-developed product for their portfolios. The tool will be more fully discussed in the Tools section of this chapter. Portfolio authors can choose from among six possible color schemes and throughout this movie several are seen. Portfolios are navigated with a bar on the left side of the screen. Each page can have several types of sections. There are additional credentialing documents and student teaching requirements for the portfolio, but students participating in this study were preparing to enter student teaching and had not completed those additional artifacts.

Multimedia 15 is a movie tour of student-authored portfolios at VendorBuilt College. There is homogeneity in these portfolios and reasons for that sameness will be the focus of discussion in subsequent sections of this chapter. Nevertheless, students are able to exercise their own creativity within the constraints of their primary tool and their requirements. That is highlighted at the end of this video.



DESCRIPTION: This video is an on-screen tour of a collection of digital portfolios at VendorBuilt College. The transcript and associated figures can be found in Appendix J if you are unable to play this video.

Multimedia 15. Movie tour of portfolios created at VendorBuilt College. Students demonstrate creativity within the constraints of their tools and requirements (07:16).

Purpose or Outcome

Activity is carried out for a purpose or specific outcome. Typically, the purpose or outcome is the driving force behind the activity—the motive. With the portfolio authoring activity, informants cite a wide range of purposes. However, this study focuses on the student

perspective and this discussion will be limited to that perspective. At initial interviews at each institution, the first question to students was “Why are you making an electronic portfolio?” The responses across institutions were remarkably similar. One person after another cited “program requirement” as their primary purpose for creating an electronic portfolio. At Mason State University:

GABRIELLE: It’s required for my teaching major and it’s a lot easier than having to have a hundred notebooks full of information.

MONICA: Well, um . . . as a requirement for my education classes, I guess—part of Mason State University’s requirement.

ADAH: I’m doing it because it’s a requirement. Honestly, the base stuff that they have me do—a lot of times it’s hard to see the necessity in it.

TIFFANY: I’m making a digital portfolio because that’s one of our requirements. Given the choice, I probably wouldn’t do it on my own, but I’m doing it because that’s required of me to graduate. That’s the main reason.

And at VendorBuilt College:

ASTRA: Well, because of the fact that it’s required for our classes.

MALLORY: Because we have to.

PHOEBE: It’s a graduation requirement, pretty much. That’s why I’m doing it. I don’t think we would have chosen to do it other than that.

ANNE: I bet you get this a lot, but it’s because I have to.

Amanda was the only student interviewed who created a portfolio even though it was optional:

AMANDA: Actually, I was not required to create a digital portfolio. One of the reasons I created it, was because I am working in the Teachers College Portfolio Lab helping other elementary education majors with their electronic portfolios. So, I thought if I would have one, it would better help me out...and because I thought it would look great on my resume.

Tucker, an art education major at VendorBuilt used *CommercialFolio* to create his program-required portfolio. He explains:

I probably would have made an electronic portfolio anyway, but not with this method. I would not have known about this method except for the fact that it's required. Um, I would have done something more along the lines of either a video or build my own web page that would essentially be a resume/portfolio online that I could also save to a CD.

Adah, an art education major at Mason State, initially started her portfolio because it was a requirement. However, she has decided to expand well beyond the original requirements:

I have a lot of goals for adding onto my portfolio... I don't want this to just be a web site that I put up there in my sophomore year in college because I had to.... It just might be me, but this is my first web site in general and I want it to be something that is useful and something that I refer back to. So, I got the idea of adding—for art we have to keep portfolios... I just thought, "I'm going to stick it on here and make it more useful." I think that's something that employers would really want to look at. Yeah, I guess I really have plans to put everything that's required of me for my art education portfolio into digital format so I don't have to lug around this five-inch binder. Because, that seems to have a lot more content requirements than the digital portfolio, but I like the format a lot better so I'm planning on just kind of combining them.

Many students also talked about the idea of using their electronic portfolio for job interviews, but it seemed that idea came from others. The majority of students were quite skeptical the portfolio would be useful in the interview process—particularly those who had already spent time in schools. Mallory of VendorBuilt explained: "They've convinced us that it will be a great thing to show to our prospective employers" but later she explained that she didn't think it would probably be used:

It is a pretty cool thing to show people that "Here I am. I've got all of this stuff that I've done and you don't have to sift through papers because it's here on the computer.' But also, I honestly don't think that many people care just because of the need for teachers—at least in Florida where I plan on teaching. So, I'm not sure anyone is actually going to take the time to load up the five-minute downloadable documents to actually see my projects. I don't know.

Mason State's David also shared his doubts about the usefulness of the portfolio for job interviews:

I substitute teach and I've talked to administrators from different schools that I've been hired to substitute teach in and frankly, they don't use it. They don't even look at because of the fact that it only gives a one-sided perspective of that person. Most of the stuff in a portfolio is something good they've done. It doesn't really go and show what this person is really like. And you're not really going to hire someone just because of what their digital portfolio might say. And so they never really even look at them. When they have people come in with them, they say, "Oh, that's nice" and then put them off to the side. It's not worth anything. We're doing all of this work for practically nothing. Maybe for our own sense and for our own use.

Throughout the study, students mentioned using the portfolio for job interviews, but said they did not believe it would be used. The patterns of their explanations were strikingly similar. They started by saying the portfolio could be used for job interviews, but that they didn't believe this was true. They went on to explain that they spoke to someone trusted and credible who had told them no one would take the time to look at their portfolio. Those trusted and credible individuals were family members working in education, adjunct professors, and school personnel they had met through practica, student teaching, or substitute teaching.

Community

Community is at the base of the CHAT framework triangle. The node on one end is division of labor and the node on the other—rules, norms, and conventions. The preservice teachers discussed the context of their individual efforts, their collective efforts, and the roles others played in the portfolio authorship activity. This section begins with a general discussion of

community and proceeds to examine how these communities divide labor, as well as the effect of the community on developing the rules, norms, and conventions.

An Individual Endeavor

Portfolio authors at both institutions reported that the creation process was predominantly an individual endeavor. VBC's Phoebe explains:

I do a lot of this at home. I don't do so much in class because I get more done at my home computer....I like being able to work on it at home because I can get up and walk away whenever I need to. And then always come back to it easily and sit down and work for another hour.

Cathy finds the classes are "too distracting to get much done." Tucker also prefers working in his room on his own computer, but offers different reasons:

Mostly because I'm comfortable with it. I mean - I built that computer. I know how it works and it's fast. I don't have to worry about programs running that I don't need running. ... I know my computer doesn't have anything like that and I know I can get anywhere on the Internet that I need to get without any problems....That's another reason that I sometimes work in my room rather than on the library's computer is because I know I have this. I have *Photoshop*, *Excel*, and any various kinds of other graphic programs. Like, I have Adobe *Premiere* which allows me to make videos and I have *Illustrator* which is another incredible piece of software.

Mason State's Monica agrees that most work is solitary: "It was more of an individual thing, but when we were in class, we did share them [the portfolios] quite a bit or 'this is how mine's going' or whatever."

The Role of Professors in the Community

Professors play an important role in the portfolio authoring context. As members of the community, they help students with the portfolio task in the classes they teach and through the advice they offer. They also personify the rules and norms of the activity by defining requirements and administering policies. Very often, professors serve as tools for students to use as they complete their work. During the study at Mason State, staff in the Digital Portfolio Support Lab and Hardware Hut had a similarly strong influence on the students who turned to them for assistance.

Professors and staff at Mason State used course syllabi and websites to provide students with resources to assist them in their authorship task. In addition, students regularly turned to professors when they needed additional assistance. Gabrielle explains:

My professor for my digital portfolio had her own web site made for the class with the syllabus on it. And it had links to previous students that she had had and their portfolios. So she gave you something to look at and she showed it the first couple of days. Linda came in for a day and showed us how to compose a page and use *Fetch* to publish it and stuff. So, I had Dr. England and she was pretty cool. She knew what she was doing. If you had a question, you could go ask her. Hardware Hut will help on some stuff, but they're more for the technical problems.

Students were sometimes disappointed in the help they received. In talking about his professors, David says:

One out of two isn't bad. The one that I had for the [class] where I did my digital portfolio, like when we encountered problems she had no idea how to fix them or anything like that. So, I met a stumbling block and if I didn't have other avenues to go to, you know, what am I to do?"

Adah was also frustrated with the help she got from her professor. She and David disagree about the expectations they should hold for their professors.

ADAH: I want to give them a little slack because, as far as I understand, this is a fairly new thing we're doing. And so if these professors, who are not children of the Internet age like we are even, they might—I don't know—I can't expect them to be an expert about it. They're all learning just like I am. Or maybe I should, because they're being paid.

DAVID: You should, because of the fact that they have that conceptual framework out that states they have to be an expert. Which, they are teaching us to be an expert. And if they aren't themselves, how are they going to grade our work in that same limelight?

At Mason State, students needing assistance had the additional resources of the Digital Portfolio Support Lab, workshops, and Hardware Hut.

ADAH: Linda in [the portfolio lab] is wonderful. She has so much patience and every time you go in there she will sit down with you and she'll help you and she's always running around like crazy trying to help everybody.

MONICA: They did have a really great office in Teachers College that I could go and ask any question in the world and they seem to know the answer to it, so that was nice. . . . It was the Hardware Hut. There's a really great guy named Brian that worked there. Everybody knows him by name in Teachers College, I'm sure. So anything that I had questions on, I could ask him about it.

While the additional resources were useful, students sometimes found it difficult to make time for those.

GABRIELLE: . . . it was on our own that we had to go see how to put in backgrounds and do funny fonts or links or whatever. We had to go find that stuff out on our own. But the Teachers College provided workshops to teach us how to do that, but it was a pain because you would have to take an hour out of your time, which—with that portfolio, was very rare. And go sit in there and get lectured for another hour of your day. But they were fun and I learned a lot.

Gabrielle summarizes the discussion: “Well, like Adah said, [portfolio lab] is very helpful and each professor...it just depends on how knowledgeable they are.”

At VendorBuilt College, students had a smaller variety of resources than their peers at the much larger Mason State. Overall, they felt they had access to what they needed to complete

their portfolio tasks. Typically, their discussions centered on Dr. S and the central role she plays in the student portfolio experience at VendorBuilt College.

ASTRA: The teachers try to make sure we have access to everything. Like, when we're doing projects themselves, or when we're trying to put it all together in *CommercialFolio*. The teachers are very good about saying, "Hey! There are new computers. Go get them." Like, we have a new lab on the education floor with three computers, scanners, and printers. And our professor made it available to use from the get go, like when we first signed on to *WebCT* in both the *Electronic Portfolio Class* sign in and the *Professional Development Class*—there's a big sign that says "Guess what we got. Go look at it. You can use it."

In our first interview, Anne spontaneously offered the following comment about their portfolio professor's demeanor.

I love the teacher who is teaching portfolio. I think she has a great demeanor and the willingness to help us because I think she does have the capabilities of understanding people didn't really learn this at the same time as everybody else in these classes. She understands it's a transition period. Compared to other teachers who don't. So, I think she's very appropriate for teaching this class. Very knowledgeable. And I feel comfortable going to her when I have questions. I think it's also a complement to this whole process.

This discussion has focused on professor and staff roles in the technical aspects of the portfolio projects. Regardless the institution, students almost never talked about their professors' influence in creating the content contained within the portfolio.

The Role of Classes in the Community

At Mason State, classes focused on content and subject matter. Some classes also had a portfolio component or associated artifact, but students reported these classes focused on subject matter more than the portfolios. Sometimes, portfolio leaders or the Digital Portfolio Facilitator (DPF) attended specific class sessions to help students with their portfolios.

During the Summer I 2005 semester, the DPF made two visits to an introductory secondary education class where she introduced students to *Netscape Composer*, basic skills, and available support resources. In Figure 14, the DPF works with a student in the foreground and the professor works with another student in the background. There is also a graduate teaching assistant working with a third student, and other students working together to help each other.



Figure 14. MSU Digital Portfolio Facilitator and a professor work with students during class.

At VendorBuilt College, classes had a more prominent role in the portfolio experience. Students enrolled in a portfolio class were scheduled to meet twice a week. The first meeting of the week was required, but the second was an optional lab day. During the required class session, the professor lectured and demonstrated. She facilitated whole group critiques of student work and led discussions about professional issues such as responsibilities during student teaching, professional dress, and professional behavior. She also fielded questions to clarify requirements, offer suggestions, and instruct students to help the class acquire proficiency with the technology. As the semester progressed, she allowed an increasing amount of time for students to work on their portfolios as she circulated among the students, read their work, and made suggestions.

During scheduled meeting times, students often helped each other. They worked to figure out how to use the technology. They coached each other on using the scanners; figured out how to edit HTML; and held informal discussions about their portfolio task. (See Figure 15.)



Figure 15. Alicia helps Courtney edit some HTML.

In Multimedia 16, Phoebe explains the importance of the informal discussions the social studies majors held during their classes and work sessions.



We had a lot of artifacts that were on there [the matrix of required artifacts] that we were supposed to have to put in that none of the secondary ed had done because there were certain elementary ed artifacts that we obviously didn't do. And then we had classes that we didn't have to take that were required for every other education major except for secondary ed social studies – even secondary ed English had to take them, but we didn't and I don't know why. But – so – and those were major artifacts that we didn't have so we were figuring out how we were going to incorporate a 12-page Civil War paper to be, you know, my communication. So, it was one of those things where we just had to sit and – what it became was – we had to make up something in some way to make everything fit. And it was a little ridiculous.

Multimedia 16. Phoebe talks about the many discussions she and her peers had regarding artifact placement (00:47).

With all of the collaboration and conversation, things sometimes appeared chaotic. The following extract from my field notes describes a fairly typical day in late October.

The girls in here (they are all girls now) are all working, but talking as they do so. They talk to each other from the front and back of the room. There is a general hubbub, but occasionally specific topics surface. For example, they are talking about the number of days left this semester. Someone knows that count and shares it. The others find that scary because they still have so much left to do.

Both scanners are being used for projects. Several students are working on their matrix of artifacts. Others continue on their reflections and adding artifacts. One of the girls calls out–wanting to know a course number. No one answers, so she calls out again. Several join the discussion, trying to figure out the answer to her question.

Dr. S gives students a series of deadlines to complete various components of their portfolios. The timeline Dr. S publishes reflects the ambitiousness of this project and the students scramble to keep up. One afternoon at the beginning of November, class time becomes quite

chaotic as students realize their deadlines are near. The *CommercialFolio* service is running slowly and behaving in new and unpredictable ways. The following excerpts from my notes attempt to capture what this class session was like:

Things today are tense—the deadline for having the portfolios done is coming up. The class is frantically working. Everything is loud and even Dr. S comes walking down the center of the room saying, “I’m feeling so out of control!” as she waves her hands in the air. Many people have questions. The room is loud. Everyone needs her help. *CommercialFolio* is acting up, AND the scanners in the lab are not working.

I find out the students are planning a trip to Chili’s for two-for-one happy hour, except today they’re calling it 12-for-6 because their ‘portfolios are driving us to drink.’ Someone suggests they shouldn’t wait and should just leave now.

Dr. S leaves the room at 3:50 pm—I think she went to the bathroom. The students got panicky as soon as they saw her walking out, commenting that she couldn’t leave now and wondering if she was going to be coming back.

Hands are up all over the place in the lab—two and three at a time. The tension in the room is palpable—or at least in this part of it.

Most class sessions are less stressful than the one just described. On other days, students take the opportunity to have fun with the task. Following is a vignette from one of the classes:

VendorBuilt College has a girls’ soccer team and one of the portfolio classes has three team members in it. Class meets in the late afternoon the day of the big game⁷ against their main rival. Several of the students—including one or two of the soccer players—arrive early. One of the students is getting jersey numbers because she’ll be making signs to cheer her classmates on. Alicia admits she’s never been to a game and the others try to convince, cajole, and persuade her to come to a game. Class begins, but the students remain high-spirited. The students are very excited about going to the game later that night. The professor asks someone to share an accomplished practice and Alicia volunteers. Once she’s presented her work to her classmates, the professor asks for comments and suggestions. One of the soccer players begins: “Maybe I’m bitter to her because she’s not coming to our game, but . . .” Alicia agrees to come to the upcoming home game on Friday.

⁷ Unfortunately, VendorBuilt College’s girls’ soccer team lost the big game by a score of 4-1 later that evening.

This banter and camaraderie on the day of the big soccer game is just one example of students having fun with their classmates. Earlier in the semester, Travis decided to act on an idea for amusing his professor after she led long class discussions about using the portfolio to portray a professional image and whether or not students should include pictures of themselves in their portfolios. She assigned students to draft an introductory page for the portfolio—including both text and image. Travis submitted the photo in Figure 16. Dr. S was amused. Surprisingly, some of his classmates took it very seriously. Near the end of the semester, Matt learned he had been named “Bartender of the Month” by the local newspaper. He shared this news with his classmates, who jokingly suggested he include that in his portfolio in a section called “Awards and Citations.”



Figure 16. Travis submitted a photo intended to amuse his professor.

The Role of Friends, Peers, and Roommates

Professors at both institutions encouraged students to work together and to use the work of others when appropriate. Tiffany shares:

My last professor, who I had for [a class] let us copy and paste another kid's main frame and then we'd delete his information and put in our own. So it was kind of like a template.

Some professors facilitate this kind of sharing. An Educational Technology professor at MSU set up student weblogs to share technology tools and code. During her work session, Amanda used an entry from one of her classmates to help her figure out how to embed her video in a portfolio page. Surprisingly, she used the word "stealing" to describe what she did: "Let's just go into his thing and try to steal it again. ...I think I just need to change his URLs to mine..." (See analysis on page 221.)

At VendorBuilt, Dr. S included many examples of portfolios that students before them have completed in discussions. She also posted tutorials sharing tips and tricks students have identified to help them work with the technology.

Students at both Mason State University and VendorBuilt College discussed the involvement of friends, peers, and roommates in the portfolio process:

TIFFANY: And I called one of my guy friends almost in tears and said, "Come help me! I don't know how to do this." And so he said "OK" and came in and he sat down with me and showed me how to do things. And I would type it in, but I just had trouble actually publishing it and making it. I could write it and save it, but to get it on my web site was a whole different story. He really helped me figure it out. I think this was definitely my best experience with publishing. I think it'll just get better and better. But to actually have time to troubleshoot and have someone there that actually kind of knew Macintoshes—he wasn't a genius by any means—but he just really helped a lot. So that made things a little easier. To just have someone that could say, "here's what you do and here's how you do it." To sit down with me and actually show me how to do it instead of just doing it for me.

DAVID: I think I care about the students in my classroom because, like with their portfolio (I don't know if anybody got mad or not), but I went and looked up everybody's portfolio on the Web and found a couple of mistakes in a few of them and pointed it out and hopefully, they'll do the same for me because that's an integral piece of my education here—or at least Mason State is making it one of my top priorities. So I wish someone would help me find mistakes so that I can

correct them in time before it goes out and gets graded. So, I would hope that all the other students would care about each other like I do.

ADAH: I think I've more looked at it to see these ideas that I think are cool for mine. Is that out of the limits or out of the boundaries of the portfolio? I wanted to see what other people had done to see what's professional or not.

MALLORY: My old roommate is interning now, or she's done now, and she sent me hers to look at and that was really useful in the beginning when I really had no idea what we were supposed to do. And some of the open-ended preservice indicators, we could choose—I saw what she put and how it fit and—one thing I didn't really like—it seemed like stretch for her to make it fit—so I didn't choose that, and so, it was kind of nice to look at that and have another example.

PHOEBE: One of the things about *CommercialFolio* is that I live with other education majors and so we help each other. One of them, especially, is interning now and so she just went through this whole process last semester and so she's great for helping.

CATHY: Anne here, she is the same major as I am and we discussed a lot about why we were putting certain things in certain places and “Were you going to put this here?” and “I'm going to do that, too” and kind of justified why we were going to do things the way we were.

CATHY: I found that looking at what other people were doing in theirs helped me and also the amount other people were working on theirs motivated me, I think. People were like, “I'm going to be working on my portfolio tonight” and I would be going “Oh, I should, too.”

Others tell stories of delegating work. Kayla's is a humorous story. She arrived before class and was cheerfully talking about the progress she had been making on the portfolio task. She shared her secret: “I *did* delegate finally. I made my boyfriend scan in all the papers I needed.” When I asked how she talked him into this task she explained her technique: “I changed the password on *World of Warcraft* [video game] until he got it done!”

Adah, the art education from Mason State, had been carefully considering whether she should include some of her artwork in her online portfolio. She turned to one of her friends for

advice and was surprised when he discouraged her from this idea she thought was such a good one.

ADAH: Surprisingly, the most resistant with that is with one of my friends who is an English Ed major, and he is like—his portfolio is just this straight, basic format. He has a picture of himself, you know, and then just paragraphs. And mine is very much not like that—how I have it set up so far. And he was complaining, actually he was the major one that said it was unprofessional and caused me to question it. So I asked some of my other teaching friends and they said it was fine. And then I talked to my professor and she actually—she didn't really give me a very helpful response. She was kind of like "you just do whatever you want to do" and I thought, "No, I want to know what's good. I want to know what employers will appreciate and what they won't."

At times, students were unsure if working together was permitted. In our first interview at Mason State, I asked one student to "tell me about working with your friends on your digital portfolio project." She responded with a lot of laughter, but my sense of her laughter was that she was uncomfortable with my question. Afterward, I reminded her that our discussion was confidential. She responded:

No, no. No, I'm not a cheater—by any means. I can remember just being panicked. I had my deadline to get everything done on my portfolio and, of course, I put it off which wasn't a good idea. But it's too overwhelming that it doesn't make me want to sit and say, "Today's the day to figure out the portfolio." So I put it off.

At VendorBuilt, Anne raised the issue of cheating in our first interview: So, there's been a lot of cheating going on, I would say. And there's also been a lot of hints and help about how to work the *CommercialFolio* process....There's no use or interchange of information because I think it's such a small knit college that teachers would know if they had seen this project before.

Anne went on to describe a process of reviewing and modeling in which students in the program review successful portfolios created by others ahead of them in the program in order to glean ideas for their own portfolios. Anne's not sure the professors would approve, explaining, "It's very secretive that it goes on" but she is quick to add, "I'm sure they've caught on to this generalized format that everyone seems to have." (See analysis on page 221.)

At Mason State, the portfolio initiative appeared to be well-known across the student body and faculty. This was obvious in some of the small, seemingly unrelated interactions I had. The first was shortly after I arrived in the dorm. The Resident Assistant for my floor knew about the Teachers College portfolios, had friends who created one, and was surprisingly knowledgeable about the education students' experiences. An entrepreneurship professor I met in the lunch line had heard about the initiative. One of the students working in the technical support area in the library told me about helping some of his education major friends with their web-related questions. These interactions with those outside the Teachers College helped confirm that portfolio authors *do* speak to others about the process and turn to others for help and advice. At VendorBuilt, I was less immersed in the campus culture—in part, because I did not live in a dorm or eat in their dining facility. I did not get a similar sense of widespread knowledge about the portfolio initiative at VendorBuilt, but my living arrangements might have accounted for that difference.

Family Involvement

In addition to their friends, peers, and roommates, students also shared their portfolios with their families. Gabrielle's father was less than excited about her digital portfolio: "My dad thinks it's crazy that I have to do that with the digital portfolio. He didn't grow up with a digital portfolio and he doesn't think I should have to have one either." Other parents offer a more enthusiastic response. Sarah's parents "think it's neat and they show it to other people." Cathy reports "I had my family look at it over Thanksgiving, actually. I kind of just scrolled through it

and showed them some things and they were impressed and they were like, “Wow! You really *do* do stuff in college! You really have been working.”

Other students talk about receiving help and feedback from parents and family members. VendorBuilt’s Hannah plans to show her portfolio to her aunt who is an assistant principal. Hannah’s belief is that she can count on a “blunt assessment” from her aunt. Adah shares: “My mom has actually been really helpful. She just took a course in—she actually made a website for her company, so she has been really helpful in getting it going for me. So, yeah, I bounce a lot of ideas off of her.”

Additional Community Events at VBC

Over the course of the semester at VendorBuilt College, I saw additional community events and structures. Some of these were instituted at the behest of the faculty, but most seemed to be student-initiated. I can not confidently attribute this difference between institutions to specific factors, but offer the following descriptions to help the reader understand the context in which these students were working.

Passing portfolios down. Several of VendorBuilt’s students spoke about the value they gained from having guest login privileges to portfolios older counterparts had completed. Some students used their contacts with older students to get a jumpstart on their own portfolios. All used these portfolios as references and as models.

Vanessa’s story is fairly typical. She received a guest login from Kimberly, a young lady ahead of her in the program. Vanessa used this portfolio as a model - particularly for format. Vanessa says it has been especially helpful to cross-reference preservice indicators for projects.

In addition, Kimberly helped Vanessa with her first reflection. Vanessa was able to do the majority of her portfolio work the summer before her required portfolio class—focusing on her reflections and writing introductions to her artifacts. She spent the class semester tweaking the format, finishing her reflections, making the portfolio “pretty,” creating a splash page, and adding the artifacts she created her final semester of classes. Her experience was valuable enough to convince Vanessa that students should be required to partner with someone who did a good portfolio—or that the professor should share a completed portfolio with the class.

Anne also had access to previously completed portfolios—two of them. Reviewing those was so beneficial for her that she has already shared her completed portfolio with younger counterparts in the program. In fact, she believes this sharing will account for the greatest use of her completed portfolio.

The future use is probably—the biggest use for this portfolio is going to be as a template for other people coming up and doing this portfolio class, because I already know I’ve shared it twice with students within the past few days saying they’re going to need it later and to use mine as an example. So that’s the biggest use it’s going to get.

(See analysis on page 221.)

The CommercialFolio late night work session. In the syllabus for the class, Dr. S outlined a briskly paced schedule to help students structure time and complete their portfolios on time. Despite Dr. S’s planning, students fell behind. As the end of October approached, students talked about having a lot of work left to complete for their portfolios and in their classes. Their anxiety was exacerbated by slow system performance from *CommercialFolio* as the semester end drew near. Cathy arranged an “*CommercialFolio* Party” in early November. She talked to some friends about getting together in the classroom lab one evening to work on their portfolios. The idea was to work and bounce ideas off each other. By the time they came to class on

November 1, they agreed to start work around 8:00 that evening and work until the library closed. As they worked in class, they discussed their evening's plans with me and others. Sabrina described the event to me: "You know how they have self-help groups? This is sort of a support group for slackers." As class ended, Cathy stopped by the scanner where Anne was working and invited her to join the others in their late night lab work session—"in case you need some community to get through this."

I arrived back in the lab at 8:10 pm. Sabrina was already working and Cathy had left a note letting others know that she was getting coffee "so we can portfolio party all night long." She returned from the local Dunkin' Donuts with coffee and donut holes shortly. Maria also brought popcorn and candy.

Maria took a place at the scanner in the front of the room and Cathy at the one in the middle of the room. Others were seated at computers without scanners. Throughout the next four hours they wrote, scanned, worked, snacked, and chatted. In Maria's words: "I think if you turn everything into a party, it's a little more palatable." Students came and went; Maria had to go to work; others got tired and went home; Anne arrived late. The last one left when the library announced closing time.

At the final focus group interview, Cathy explained why she organized this work session:

Just for support. We all just needed to get work done, so I volunteered to bring the coffee and donuts and a couple of people showed up. It was just a way we could get some things done and talk about what we were doing. "What preservice indicators are you using for this one?" "Oh, ok. I'll use those, too" or "Oh no. I don't like that one." Kind of like the way Mallory said about looking at her friend's old portfolio. Kind of doing the same thing, but just in person. But, I'm very much an interpersonal people person, so kind of—that was good for me."

Stress and the timelines affected Anne, too. She was at the late night session Cathy organized, but had some of her own. She explains in Multimedia 17.



I think it was the stress and the big overall, looming, hanging presentation that we had to give and the time restraints and everything, like, “You have to do this by this time period.” It was ok for the first three artifacts that were due. We had a deadline. We had three artifacts to do and your splash page. That was fine. Then – like two weeks later – everything was due! And there was leeway though and I didn’t really exercise any of that. Like, “Ok, you don’t have number 12 done and take another week and then submit this to me and that’s ok.” So whenever the font got messed up or the format of my paragraph heading or something in the reflection area or a picture wasn’t coming up like I thought it would, I would get so anxious and stressed out and, you know, I just wanted to punch the computer screen and I would stay there until the library closed. I would go back with my roommate’s laptop that has a wireless connection, and sit outside the library, ‘cause I don’t have Internet connection at my house.

Multimedia 17. Anne explains portfolio-related stress and late night work sessions (01:28).

“This room is the place to be.” One outcome of the late night work session was that Cathy sent an email pleading with Dr. S to make the *CommercialFolio* lab key more accessible to students. Dr. S agreed and use of the lab picked up dramatically shortly after. Students needed access to working scanners and this room offered three. Students needed to scan practicum evaluation forms to include in their folders. Those forms were in the education department office and this lab was nearby, offering convenient access for the task. The lab was located in the same hallway with Education faculty offices, so students sometimes waited for faculty in the lab. Occasionally professors stopped by to see how students were doing. The bustle of the lab on one particular day prompted Maria to exclaim, “This room is the place to be.”

The room serves multiple purposes. A lot of things are stored here—including some large puppets. Beginning in the first half of November, Dr. P. took the puppets out of storage and set

them up in chairs on the room. (See Figure 17.) His intent was to make them accessible for some of his own students interested in starting a puppet troupe. However, the students working on their portfolios enjoyed having them around, too. Mallory, for example, told those in the room she thought the puppets had been bought for therapy. She picked up the dog puppet and launched into a dialogue with the puppet about doing homework, cleaning her room, and walking the dog. Maria laughed so hard she had to wipe tears from her eyes.



Figure 17. *Kids on the Block* puppets in VBC's *CommercialFolio* lab.

Some of the students talked about decorating this lab to make it more inviting. Dr. S suggested hanging the puppets on the walls, much like dolls on stands. Some of the students took it upon themselves to display a holiday quilt project they made in an ESOL class.



Figure 18. Students display a Holiday Quilt project from one of their classes in VBC's *CommercialFolio* lab.

Portfolio Presentation Night. Each semester, Dr. S coordinates a Portfolio Presentation Night. She recruits participants from the education department as well as departments across the campus to participate. This year, for the first time, she also solicited participation from VendorBuilt's stakeholder group. The stakeholder group is a collection of community professionals interested in education at VendorBuilt who serve in an advisory capacity to the Education Department.

This year, the reviewers' evening began with a catered dinner in the President's dining hall. Education department faculty brought homemade pies for dessert. Dr. S and the department head welcomed those who had volunteered to participate in the event, described how the evening would progress, laid out expectations, and thanked everyone for participating. Once the dinner was over, everyone adjourned to their assigned classrooms to begin the real work of the evening.

Each classroom had several reviewers including at least one education department faculty, one faculty member from outside the department, and one or two members of the stakeholder group. In each room, reviewers listened to approximately six VBC students present their portfolios, asking questions and offering feedback at the end of the presentation. The rooms

varied in size from a small classroom to a large auditorium. Each was equipped with a computer, projector, and screen.

Students are required to participate in Portfolio Presentation Night. They are notified of the date and time the first day of class. Each student is allotted a 20-minute time slot and 10-minutes for panel members to ask questions. Portfolio Presentation Night is presented to the students as “an opportunity to engage in a professional dialogue with professors and community leaders in education.” In the class sessions leading up to Portfolio Presentation Night, Dr. S talked about attire and professionalism. She also offered students a chance to practice their presentation in front of their peers who give feedback in the style of their professors.

Most students were extremely nervous as Portfolio Presentation Night approached. Students wanted to know which professors they would have on their panel. After all, some professors have sterner reputations than others. Students waited anxiously for Dr. S to release the schedule. Some were hoping for a specific professor. Others were hoping to avoid a specific professor. Most were planning to use this information to tailor their presentations for their audience. When Dr. S finally released the schedule, it was received with both cheers and groans. Once it was released, students began to finalize their presentation plans. Some chose to present projects their reviewing professor assigned while others chose to show artifacts their panel members had not yet seen.

The day before the big event, Hannah talked to Astra about her jitters. She confided that she could not sleep the night before, lying awake for four hours to think about her presentation. When Astra offered to lighten the mood during the presentation by making faces, Hannah said she would cry instead. She just felt too much stress. On the big day, Courtney put her feelings very plainly: “I seriously feel like I’m going to puke. I am *so* nervous.”

That evening, students arrived with friends, roommates, parents, and future in-laws in tow. The young men all wore ties and many of the young women were in hose and heels. They loitered in the hallways, nervously waiting for their turns and for those who had gone before them to emerge from the room. Students told about their presentations, the artifacts they had presented, the panel members' reactions, and the questions they had been asked. They congratulated each other on their successes.

Many of the items students presented were not surprising: classroom management plans, curriculum orientation papers, and teaching philosophies were all popular topics. All VBC students had completed an ethnography project for one of their classes. Some chose to present those—including Matt who had visited a nudist colony *au naturel*. Although reviewers reportedly liked it, they also suggested he take it out before sharing his portfolio with potential employers.

Cathy organized *Portfolio Two for One Madness* immediately after the presentations. The announcement and RSVPs were arranged through *Facebook*⁸ and word of mouth (see Figure 19). The party was held at a local Chili's restaurant. Approximately 30 people attended. Attendees included education majors, friends, roommates, and boyfriends. Students asked me not to put the events of the party on the record.

⁸ The *Facebook* is an online social network service run by a 21-year-old Harvard dropout who was studying Psychology. *Facebook* has 8.5 million unique visitors on its site.

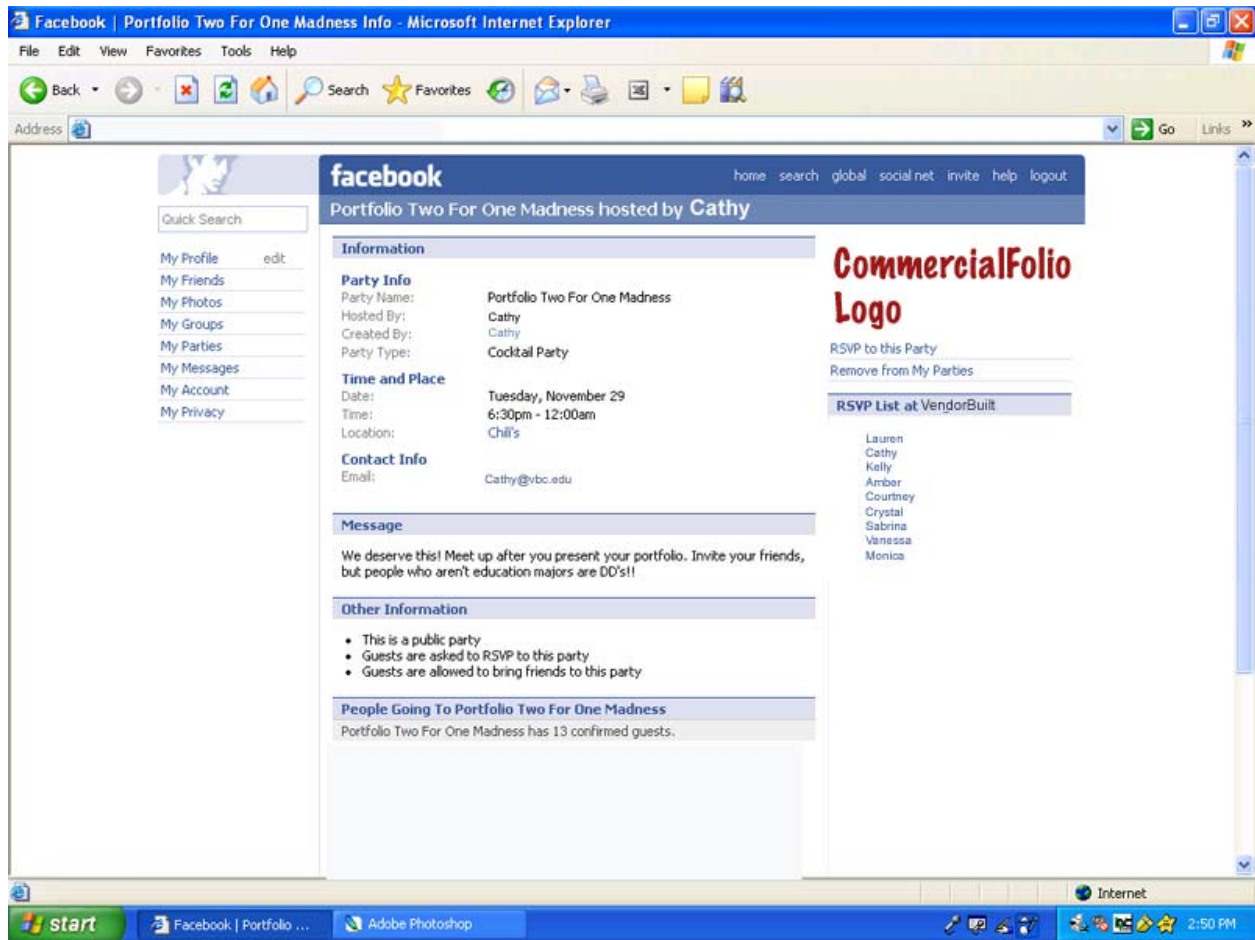


Figure 19. *Portfolio Two for One Madness* invitation on Facebook.

The Importance of Community

At both institutions, but especially at VendorBuilt, community was important to students involved in creating their required portfolio. You have listened to—and read—the words of students explaining how they used portfolios from others in their community. Cathy organized a late night work session to take advantage of community in order to make it easier for her and her friends to complete their portfolios. She even used the word “community” as she extended an invitation for Anne to join the work session.

After Anne spent part of the night outside the library with her roommate's laptop and wireless card, her roommates set up an intervention program. Anne continues her story in Multimedia 18.



After that episode, I went to the doctor and said, "I have a problem. I have a problem." And then one of the students in the class – I remember her (she's also a roommate of mine) and she – I remember myself getting up and saying "I've got to go. I have to go do this. I have to send this lesson plan and get feedback on it and I have to put it on there" and I remember her being like "No! Go to bed. It's like midnight. Why are your keys in your hand? You're not going." And because I was just so stressed out that they were really worried about me. And that's me. That's not everybody at all within the portfolio class. But, the fact that the anxiety hit that hard. I was so angry at this class and so angry at this portfolio. I did it and I did it well and, you know, the fact that it's over...there's a HUGE chunk of relief after it was done and after that presentation was done and everything was off my shoulders and I was on a high and I couldn't go to bed. Life was beautiful. Then I got my bike stolen at like 2:00 am. I had a window of – like – 8 pm to 2 am that life was great! And the anxiety started all over again. But, I gotta say, it's just the anxiety of the time deadlines and things that were required that I didn't want to put in there because I thought it was a ridiculous artifact. Things like that.

Multimedia 18. Anne describes her roommates' concern after her late night work sessions (01:33).

Although Anne's behaviors appear to be outside the norm, her feelings of stress are not unusual. Nancy summarizes: "The projects—so much is involved. The only way we can get through it is to lean on each other. It's too much. People in our class—we're all like family."

Division of Labor

In the CHAT framework, the intersection of community and object is labeled Division of Labor. Recall from the chapter explaining CHAT theory that labor can be divided horizontally

between community members of approximately equal status and vertically between community members with different levels of status. Throughout this section there is evidence of both types of division.

In the activity systems at each institution, students expected to have structures in place to enable their success at the portfolio task. Most were able to identify a wide variety of resources to help them complete their portfolios. At both institutions, professors and staff provided helpful resources to support students in their task. Some of those will be more fully described in the Tools section. These resources included links to useful and informative websites. Some resources focused on content (help on writing a teaching philosophy and links to standards), while others focused on resources to make the portfolio visually appealing. Faculty at both institutions developed templates to help their students in the portfolio task - all students at VendorBuilt used a template as did many at Mason State. In addition to the portfolio template, at least one professor at VendorBuilt College developed additional templates for the major projects in both of the classes she taught.

Students also spoke extensively about how important access to technical troubleshooting was to their success. Whether this technology support comes from professors or staff, students considered it essential. Adah summarizes: “It’s surprising. I usually don’t take advantage of things that schools say they have to offer. This is one of those instances where I have taken advantage of it and it’s been very helpful.” However, readily available assistance can sometimes come at a price. Several students talked about getting “too much help” explaining they appreciated it as they received it, but had to face the consequences of accepting too much help later. Adah is a good example. The ideas for her portfolio were more ambitious than most. She used more complex software to complete more complex tasks than any of her peers I

interviewed. In order to do this, she visited the Digital Portfolio Support Lab for assistance. In her work session, she faced the consequences of getting too much help.

Hmmmm.....the problem is that I had someone help me transfer the images and fonts and everything, my *Word* documents, everything. I had someone help me transfer all of that over to *Dreamweaver* for me and I don't know how to do that. I'd be much better off manipulating it once I got in there, but I'm not sure how.....how to get it in there.....See, when we had to transfer the files, we went ahead and kept the ones I already had. Linda did all of this, so I'm not really sure. They seem the same. Let's go with the second one, and hope that it's chronological.

Tiffany had a similar challenge: "I've had some really helpful people but usually they don't show me how to do it, they just do it for me and say 'here you go.' And I'm like 'Well, I don't know how to do it now!'" (See analysis on page 222.)

Students at VendorBuilt also spoke extensively about the involvement of their peers in the portfolio task. They helped each other learn various technology skills. They held many long discussions about content matters and helped each other make content decisions. They motivated each other to persist in the task, and—in Anne's case—they intervened when her persistence was excessive.

Rules, Norms, and Conventions

In the CHAT framework, the intersection of community and the subjects represents the rules, norms, and conventions for the activity. This section of the chapter begins with a description of the portfolio-related requirements in place at each institution and then highlights representative examples of that intersection with special attention to the roles of various community members.

The Broader Context

To examine this node of the CHAT framework, it's important to understand the broader context of the activity system. Mason State University and VendorBuilt College must both satisfy accreditation and accountability directives set by their respective states. Both institutions have chosen to use a portfolio assessment system to track preservice teacher candidate progress toward meeting licensure requirements. At Mason State, leaders opted to build their own tool that allows their students to use a wide variety of generic tools for the authoring task. At VendorBuilt College, decision-makers opted for a commercial solution. The influence of the accrediting bodies on the requirements is profound. Understanding the differences between these bodies and the requirements is outside the scope of this dissertation. It is worth noting that students at each institution seem to be aware of this external influence on their experience.

Mason State's Sarah explains:

Professors require it because they're required by the Teachers College that they are using technology in their courses and so, in order to prove that that's what they're doing, they require us to post things on our web site. So it's assessment for them—or showing that they're meeting the standards of Teachers College.

At VendorBuilt College, Dr. S led at least one class discussion about the state's requirements; the reasons faculty selected the *CommercialFolio* solution; and how the student portfolio task fits into the larger scheme of teacher preparation. Anne believed the state's involvement was quite extensive. She talks about Portfolio Presentation Night:

I thought there was going to be somebody from the State Board here at VendorBuilt. I mean, that's what I had been told all my years in education—there's going to be someone from the State Board of Education who's going to come and they're going to be in one of the classrooms and that would have been amazing....Well, that would have been nice if I could have gotten feedback from a county supervisor or a state board educator who has put these accomplished practices out. It just would have made sense to have gotten some feedback from

them like “You know, your presentation meets this accomplished practice and the way you’re presenting yourself now and what you’ve shown on your portfolio.” But, that aside—if that’s an unrealistic expectation...I was really disappointed.

Portfolio Requirements at MSU and VBC

At Mason State University, preservice teachers pass through four decision gates. Their portfolios are part of this decision process. As students pass through the first gate, they have completed their introductory course and started their INTASC standards-based portfolio. This is typically completed during the freshman year. The second gate is for admission to the teacher education program and the third allows students to proceed to student teaching. Each licensure area determines both method and scope of the corresponding portfolio review for the second and third gates. The fourth and final gate is to attain a recommendation for initial licensure. The final review is completed after student teaching and is conducted by the cooperating teacher, university supervisor, and a content specialist.

At graduation, a student’s portfolio should have a resume, a philosophy of education, a list of teaching resources, and evidence of competence in each of the 10 INTASC principles. For each INTASC principle, the student must choose two artifacts, and write a reflective statement and a rationale for each artifact. The Teacher Education Handbook offers the following definition for rationale: “The rationale is an articulated narrative explaining the connections between the artifact and a particular standard.”

Portfolio-related requirements at VendorBuilt College have recently changed. Under the new guidelines, student portfolios are evaluated three different times. The first evaluation is during a two credit hour class called *Electronic Portfolio Development*. Until recently, this course was optional, but popular with students interested in learning more about their electronic

portfolios and how to prepare them. It is currently required for all incoming education majors.

Whether it was required or not, most students have taken the course, but not all of the seniors to whom I spoke.

During the *Electronic Portfolio Development* class, students received a portfolio template to help them with their task. This template included the matrix of required artifacts outlining the requirement to include eight specific class projects and where each should be placed in the portfolio. In class, Dr. S encouraged students to refer to this matrix throughout their program of study and to upload and reflect on required artifacts as they completed subsequent courses. By the end of the *Electronic Portfolio Development* class, students are required to complete a splash page to introduce themselves and to draft a teaching philosophy. They must also use the portfolio as an artifact for the Technology Accomplished Practice and to write a reflection for that portfolio artifact. In addition, students must find graphics to accompany each of the Accomplished Practices.

The VBC portfolio template outlined seven questions to prompt reflection and shared the following instructions for the reflections:

When you write your reflection be sure to use the pre-service indicators as a guide to supporting your argument that this evidence or artifact does indeed reflect the Accomplished Practice. Use the language of the indicator and AP itself and either highlight it, underline it or bold it to indicate to the reader its source.

Once these initial requirements were met, students submitted the portfolio to their advisors for review and comment.

As students proceed through their programs of study, they are responsible to add required artifacts to their portfolios. At the time of this study, only one professor required students to add completed projects to their portfolios as part of her classes. This requirement was in addition to

the paper submission they also completed. Some professors were willing to accept class assignments submitted via the portfolio system, but did not suggest it to their students. At least one professor insisted student submissions be made on paper even though students would ultimately convert the projects for display in the portfolio.

In the final semester before student teaching, students enroll in another two-credit hour course called *Professional Development Seminar*. During Fall 2005 semester, many students in the two sections of this class had some familiarity with *CommercialFolio* from the optional *Electronic Portfolio Development* class or another one of their classes. The primary focus of this class was to facilitate students working on their portfolio. Before proceeding to student teaching, students must complete the following items:

- Splash page introducing the student to the portfolio viewer
- Philosophy of Education
- Update the matrix of artifacts
- Upload practicum evaluation forms and write one reflection for all
- Upload scanned copies of teacher certification examination results
- Upload electronic copy of most recent transcript
- For each standard, upload an artifact, reflection, and completed rubric. The department specifies artifacts for eight of the twelve standards.

Instructions for reflections were the same as those given in the *Electronic Portfolio Development* class. In the *Professional Development Seminar*, Dr. S reviewed and critiqued students' portfolios numerous times. Near the end of the semester, students notify their advisors that their portfolios are ready for review. After the portfolio review, the advisers determined if the student was allowed to proceed to student teaching or if modifications to the portfolio were

required. Throughout their internships, the student teachers are required to add at least six lesson plans from early, middle, and later stages of their internship. For students with two placements, the expectation is to include plans from both placements. Before graduation, a student must also add three letters of recommendation and internship evaluations. Once completed, the portfolio is submitted to the adviser for review. The adviser determines whether the student may graduate.

Students Working With Requirements

At Mason State, students in secondary education licensure programs received much of their instruction outside Teachers College. Consequently, faculty external to Teachers College oversaw much of the portfolio development and assessment for those students. The portfolio leaders in Teachers College continue to work with their colleagues in other departments but have only limited influence with them. Their respect for academic freedom influenced the design of the assessment system to allow external colleges and departments to implement the portfolio assessment system as they see appropriate. At times, education faculty indicated they would prefer colleagues make different choices.

In contrast, students in the Elementary Education department were under the supervision of Teachers College throughout their program of study and through all of their portfolio development efforts. Between the various programs at Mason State University, the students' experiences varied. These differences were most notable when examining the impact of the various requirements on the student experience.

For the Elementary Education program, students seemed to be very clear about the expectations held for them and how their portfolios would be assessed. Throughout the summer,

I frequently saw Elementary Education students refer to a nearby rubric. Often, it was printed on a paper next to them. At other times, it was posted on a course website or in the course management system.

For students in external programs, depending on the specific program, the expectations were often less clear. In one specific external program, this became evident observing students who visited the digital portfolio support lab for assistance. These young men—they were all men—were frustrated and upset because they were facing the next decision gate and did not understand how to proceed successfully. Their eligibility to enroll in the next course hinged on passing through the decision gate and—in their eyes—their portfolio was the gate key. Their stories were remarkably similar. All complained they were told their product was unsatisfactory but their requests for more guidance from the evaluating external professor were met with unhelpful advice. One was particularly upset because his professor said the content of his portfolio was fine, but that he needed to make the portfolio look “more professional.” He didn’t understand what that meant and reported the professor refused to clarify further. He returned to the lab the next day for help. He spent three hours in the lab working with Michael, one of the main portfolio assistants, to improve the look of his portfolio. Throughout that time, he made the tops of his pages more consistent, changed the color scheme on his pages, updated his resume, and checked the spelling on his pages. In the early part of his work session, Adam’s attitude toward

the portfolio was quite negative: “I hate this so bad. I’m going to junk it when I’m done.....This is killing my school pride - this right here, and the parking ticket people!”⁹

Approximately two-thirds of the way into this work session, Adam revealed he had started working ahead on his portfolio task. His mood was substantially improved and, as he thanked those in the lab who helped him on this task, he said, “I feel good about this.” Over the next few days, three more young men came in to the lab with similar confusion about what was expected of them. Bob is one of them, and you will read more about Michael’s work with Bob near the end of this chapter. (See page 221 for analysis.)

At VendorBuilt, faculty gave students very specific and detailed requirements for most components of the portfolio project. Students were required to purchase and use the *CommercialFolio* tool; they were required to include specific artifacts for eight of their twelve standards; they were required to write their reflections using language from the standards document; and they were required to take two classes to work on their portfolios. These requirements pervaded the student experience and much of the discussion in the rest of the chapter.

⁹ The “parking ticket people” are well-staffed and thorough. I received a parking ticket the morning of my first day on the MSU campus. Ironically, I got it as I was trying to make arrangements for a parking permit.

Assessing Portfolios at MSU and VBC

At each institution, I conducted a focus group interview after students submitted their portfolios near the end of the semester. In these final interviews, I asked students how their portfolios would be assessed. Their answers were interesting.

Throughout my five-week visit at Mason State, no student had mentioned *Rubigrade* in any context. I had spoken to portfolio leaders about *Rubigrade* and watched Linda work with a professor to learn how to use it more efficiently for some of his tasks. I also saw a professor or instructor in the computer lab entering grades into *Rubigrade*. However, I had not seen a single student log in to review results, nor had any student mentioned the program when talking about their portfolios. The question about how portfolios would be assessed was first on the protocol for the final interview.

Gabrielle and David both said professors assessed their portfolios using a rubric on *Rubigrade*. Student could view their results in each area by logging in to *Rubigrade*. Once logged in, they saw radio buttons in different colors: red, yellow, green, or blue. These colors indicated different levels of performance: distinguished, proficient, satisfactory, and unsatisfactory.

Gabrielle had recently passed through one of the first two assessment gates and explains how she believes the assessment worked for her and her peers: “Most teachers will just give you all satisfactory so that you will always look better on your next class. But I put a lot of work in mine and I had some proficient and distinguished....”

In contrast to David and Gabrielle who were familiar with *Rubigrade*, Adah never heard of it and seemed to have no idea what they were talking about. Sarah, in her final semester of

classes, heard of *Rubigrade* and knew it had something to do with grades but never used it through any of her courses. Sarah explained that her portfolio was graded by various professors throughout her program. Each professor set criteria for the specific projects they assigned and graded. Her impression was that “they normally don’t look at the overall portfolio.”

As the *Rubigrade* discussion progressed, Gabrielle and David told those in the group that other professors could see the results of their prior assessments. Sarah asked the others in the group “Do you think that’s fair though? That other professors can judge you before you even get in their classroom?” She clearly disapproved of sharing student data and was seeking the others’ opinions. Her concerns seemed to increase when she learned that dispositions were assessed and she wondered if a student could be kicked out of the program for “having a bad attitude.” Gabrielle did not indicate discomfort with the notion of sharing this sort of data and David explained the appeal process to Sarah. Adah remained silent in this portion of the discussion.

Interactions with students visiting the portfolio support lab showed similar discrepancies in student understanding of their assessments. Those students in a licensure area within the Teachers College seemed better versed in their requirements and expectations than students in one or two licensure areas outside Teachers College. During the last couple of weeks of Summer I semester, students from at least two different licensure areas visited the lab to get their portfolios ready for the next assessment gate. In the case of several students within one specific, external licensure area, they had no idea what criteria their professors would use to evaluate the portfolio and came to the lab looking for advice they said their professor did not and would not give. In the case of a different licensure area, several students visited the lab to prepare their portfolios for the third assessment gate, although they said they were never asked to pass through the second assessment gate.

At VendorBuilt College, student portfolios are extensively reviewed in classes with Dr. S. Students incorporate her feedback into their next revisions and submit the final portfolio to their adviser for review as they enter student teaching and then again before graduation. At the final focus group, I asked the participants how their portfolios were assessed. They knew few details about those final assessments. They knew their advisers made the final determination regarding their portfolios and they knew unsatisfactory portfolios would hinder their internship and/or graduation plans. They did not understand the criteria against which their portfolios would be evaluated. Following are some of their comments:

MALLORY: Our adviser will look at it. I believe our adviser makes the final decision and then—you know, I'm not really sure.

CATHY: I think the adviser gets a rubric type of thing and checks that you've done all of it.

ASTRA: I think it's assessed against the list of everything we have in there and how well we did.

PHOEBE: I think our adviser gives us the pass or fail grade—I think.

ANNE: A lot of this isn't really clear to me still.

While all of the students seemed to believe their advisers used a rubric to conduct this assessment, none had seen it. In the final interview, Phoebe allowed for the possibility that a rubric was somewhere easily accessible to students but she had never seen it and didn't know where it might be.

Making Choices at MSU

In the programs I saw at MSU, students reported they had a lot of choice and flexibility in their portfolio tasks. They all seemed to know to include a resume, their teaching philosophy, a

page with favorite links, and to address the INTASC principles. Only one claimed not to be aware of the need to save artifacts for his portfolio. The students at Mason State described how they chose the artifacts to include in their portfolios:

GABRIELLE: The professors tell you what they want and you just build whatever you want around it. You just have to make sure you have whatever the professors want in there.

DAVID: But that would be a decision of your own as to what you want to put in there. I mean, they give you a basic guideline and it's basically your decision on how you go about making that on your portfolio. Let's say you have two artifacts and you did 12 assignments in the classroom. It's your choice to decide which two artifacts to include as long as you meet the two artifacts requirement.

ADAH: I think it's fairly open. It allows for creativity.

MONICA: I guess which one's best correlated with the standards. Which one's made the most sense and we had a handout that explained the assignments in class—how they would relate to the standards. And we wouldn't necessarily have to put them in with that standard. It was our choice. It was up to us to differentiate which one we wanted to use.

SARAH: So after student teaching, I had all of this student work that I was going to scan and put in my digital portfolio to show that I had met those INTASC principles which are just 10 statements about what a good teacher should do, basically. And so, if it says "a good teacher differentiates instruction," I would show examples from lesson plans that I wrote. I usually kept it to two artifacts for each one, so I ended up with about 20 artifacts from student teaching, and I just—like she said—chose the ones I thought were the best examples and I could choose from any kid in my class. I just chose the ones I thought were the best examples. I tried to choose maybe a higher achieving student and a lower achieving student to show the contrast and the capabilities of my class and to show how I met the needs of those two kids even though their abilities were very different.

Students at Mason State consistently reported that they were the decision-makers when it came to their portfolios. In one of the classroom observations, I saw a confirming interaction. A student asked Dr. Price what he wanted the destination of a link she was making to be. He responded, "Where you'd like. It's your own personal portfolio." When the student indicated the choice she planned to make, Dr. Price's comments reassured her of a good decision.

Making Choices at VBC

Preservice teachers at VendorBuilt College reported a different story when it came to choice and flexibility in their portfolio tasks. These students needed to include fewer artifacts in their portfolios, but eight of the twelve artifacts were determined by faculty. In our first interview, Astra was accepting of the required artifacts. She reasoned that:

...because it's the student's work, they're going to be able to show their best—highlight what the school thinks is important. Also, we get to put our own things in, so we get to show off even more creativity than what the school is able to show. I think the two of them together make a very nice mesh of work that you did your entire school career.

Other students were less accepting of the requirements which pushed them to include things in their portfolios they would not have chosen to include. In some cases, they were uncomfortable with the end result of what was included. For a number of students, this was especially true for the ethnography project they were required to include for the Accomplished Practice of Diversity. For many students, this project was completed early in their program of study and they did not fully understand that it would become a part of their portfolios later.

Mallory and Phoebe explain:

MALLORY: All along I knew we had to save things, but it wasn't concrete to me until last year what exactly was an artifact or required or self-selected or anything like that.

PHOEBE: And so I was just like the idiot coming into the education program and they talked about this being an artifact and I thought that it went in my box with file folders and nobody else saw it. So I just did it because I didn't realize it was going to be—that it was going to be my senior graduation project.

A number of VBC students say they would have made different choices for their ethnography project if only they had understood it would eventually be placed in their portfolios.

Mallory explains:

At the time, bingo was a perfectly fine option for what she told us in the class. It was just go experience something that we've never done before. And so I thought, "none of my grandparents live around me, so I'm not around old people and I never go to bingo" and all of that and so now, especially for me because I'm applying to teach in Honduras, and so diversity is right there—I'll be teaching Hispanic children. We wrote a paper in this class—in the ESOL Curriculum class which is the next class. It was called Specially Designed Academic Instruction in English [SDAIE] and it was a paper all about how to implement that and it would be perfect because I would be teaching students whose first language is not English and so I would like to use that paper to replace the bingo and it wasn't allowed. So, I have to—if I want to include it—I have to make another section for diversity.

Cathy's ethnography story is similar:

I'm Catholic, so I wrote about going to a Baptist church. I thought that was ethnically different and it is. But, I would have chosen something a little different had they focused a little more that it's an artifact rather than, "Surprise! Senior year—these are your artifacts!"

During one of the open work sessions, a group of girls began discussing their ethnography projects. The first said she thought it was inappropriate for prospective employers to learn she went to a dog track to watch people gamble. Another young lady overheard her and shared that she went to a gay bar for her project and doesn't think that's entirely appropriate for prospective principals to know either. On Portfolio Presentation Night, I found out Travis went to a Mary Kay party where he learned "it isn't really much of a party at all" and observed: "They sure did use the word 'exfoliate' a lot." Matt visited a nudist colony, a fact he chose to share in his presentation.

Anne was also unhappy about the fact that she was required to include her ethnography in her portfolio:

Oh, the project was a joke for me at first, so I never really took it seriously. I went to a music festival in Gainesville last year and basically, tried to relate to all these people who had never been to college and they were tattooed and gross and all that stuff and then—my experience growing up in a suburb and very preppy and so, this whole thing was BS and this whole paper was just like "I've never seen

people like this before” and it was just ridiculous to have to do that. And, the fact that I got to one of those deadlines and I thought “I don’t have anything for Diversity” or whatever it was, and I thought, “Oh, it’s required to put my ethnography in there” and then I wanted to redo the ethnography because I don’t want anybody reading this. This is ridiculous. And I remember reading over it and thinking, “Oh, even my writing is really bad” and even though you have a good rubric that says you did a good job, it still matters in the end how you feel about what you’re presenting. So, I can’t get rid of that and I don’t want anybody to sit down and say, “Tell me about this music festival that you went to. What does it say about alcohol in this?” and so, I’m going to try to sweep that under the rug and get something else in there that I feel better represents.

Tucker summarized: “We have required artifacts and I don’t feel like they’re sufficient for displaying my capabilities.”

Like their counterparts at Mason State, VendorBuilt’s students in an external department faced special challenges as they tried to reconcile the mismatch between the published portfolio requirements with the projects they experienced in their classes. To confront this mismatch, students in the external program engaged in many discussions about what they should include and how it should be included. The results were less than satisfactory according to one student:

I just feel conflicted when they want me to have certain things and I don’t feel like they are the best artifact to go there. I have all these other artifacts that have to be in and it [the matrix] told me they have to be placed in, but they don’t tell me where. It’s up to me to choose, but they’re not good. So I felt conflicted in my different artifacts and where to put them and they have to be in.

Few students were able to substitute one artifact for another if a required artifact was listed. Several students, including Cathy, added extras to show work they found important.

CATHY: I feel like, obviously, if you put a constraint on any sort of thing that’s supposed to be creative, kind of—I guess that is kind of conflicting. Just like—that’s part of the reason why I put my Methods of Math thing in there because that was my favorite project to make and so I was really very proud of it and very excited to put it in my portfolio even though it was not one of the things that was required.

Tucker was the only person who told me he successfully negotiated a substitution. He explains:

One thing to me is that we're supposed to put certain artifacts in certain places and there's one in particular that we're supposed to have for the Role of Teacher and I didn't put that in. I put in my Discipline and Public Relations Plan and moved that project to a different section because I felt it fit better in a different section...I understand the professors can say "These fit the preservice indicators in most circumstances," but it's not in every circumstance and so I don't think you should have to put it in a certain place. I had to talk to [the professor] to make sure she understood why I made that change...that I'm not just doing it to rebel. I'm doing it because it really does fit better in this other place.

It appeared the reflection writing task was more difficult for VendorBuilt students than their counterparts at Mason State. They certainly spent more time thinking and talking about the reflections than their peers at Mason State. One reason is likely the need to respond to Dr. S's very honest and critical feedback during the portfolio development class. However, the reasons are deeper than that. Students had difficulty responding to the preservice indicators when they were trying to include an artifact they didn't believe was a good fit. Mallory's bingo reflection is a good example of this. One of the question prompts she chose to answer was "What would you do differently?" Mallory included the following in her reflection:

If I could go back and start the ethnography process over again, I think that I would choose a different topic. While at the time BINGO sounded like an interesting option which fell under the guideline of a "new experience", I wasn't considering its implementation in my portfolio. As an artifact for diversity, this is a stretch.

Students talked about their required artifacts as a stretch over and over again - most commonly, about the ethnography. However, students also struggled with the requirement to use the language of the preservice indicators in their reflections. One of the students said the preservice indicators are "the worst part of the reflection. We just don't feel the indicators go with the projects." Cathy also talks about the reflections:

I feel they might not have been the most genuine reflections about how I felt writing the paper or doing a project, just because it has to adhere to the preservice indicators, so that's kind of superficial on that end.

Mallory also has difficulty writing the reflections within the constraints of the requirements:

The reflections are a little hard at times because I feel like I'm really making stuff up and I feel like they're going to know that it's just a bunch of [pauses] just fluff. Yeah. And sometimes choosing...we have to choose three preservice indicators and some of the artifacts that are stretches for their sections. I have conflict about which ones to choose. There's always one that says "develops professional and personal goals regarding" assessment or communication or...and so I usually choose those if I don't know what else and say, "I really want to improve myself in..." these things.

Mallory explained at length in the final focus group interview:

The reflections—some of them were really easy for me, like the things I did recently or things like the management plan or tests and measurement or things that I really, really could relate to teaching—I had an easy time reflecting on. But the ethnography, I think I probably spent three days writing about how my bingo experience taught me about diversity because I was just so frustrated trying to relate these things that had nothing to do with—and I had a lot of trouble with my art activity file and relating it to critical thinking and I got them done. I'm not happy about them, because I felt like it was BS, some of it. But, that's probably where I spent most of my time because I just dreaded writing them and I drew it out.

During her work session, Astra quips: "I may never become a teacher because of this [reflections]. 'Oh no, we can't have her. She doesn't know how to reflect correctly.'"

At the end of the project, Astra claims most of the choices as hers:

Besides the required artifacts, I think it was mostly mine. I put it together. I was the one who decided how the wording would be. I was the one that decided which pictures I was going to put in there—if I was going to put pictures—if I was going to put quotes and how I was going to use those pictures and quotes to add to the project or to take away from something negative about the project and that was all my decision. I claim it more than the teachers can.

Mallory saw fewer opportunities to exercise her choices on the process. During her thinkaloud work session she shared: “I haven’t really had very many options on this, and so I haven’t really had to make good judgments. I think it’s mostly like, ‘Gosh, should I use green or pink?’”

Student Influence on the Norms and Rules of the Activity System

Students have a more powerful influence on the norms of the activity systems than they might believe. This was evident in small ways in each institution. Recall Adah at Mason State University. She is an art education major and was trying to determine how she might incorporate some of her artwork in her teacher education portfolio. She turned to a friend majoring in English Education to discuss her thoughts and was surprised when he encouraged her to conform to the norms of the group rather than use her talents to create a unique portfolio. His resistance affected her deeply. She chose not to conform, but felt a lot of pressure to do so.

The influence of students on the norms of the portfolio activity is more pronounced at VendorBuilt College. Numerous students review portfolios from those ahead of them in the program. They then emulate those portfolios in both form and content. In the first interview, Anne raised this issue as she talked about the standardized format for many of the projects assigned to VendorBuilt students.

At VendorBuilt, Dr. S assured the students they have influence on rules and requirements. She told them their reflections, when done professionally, help professors, reflective practitioners themselves, to think about their own work and notice areas in need of change. Although Mallory did not realize she could take out her ethnography and replace it with

her SDAIE paper, other students were permitted to do so. Furthermore, faculty started discussions among themselves to make this specific change to their requirements.

Professors' Influence on the Norms and Rules of the Activity System

To the students, professors and instructors seem to personify the rules, norms, and requirements. Although at least one student at each institution seemed aware that their institution responded to external influences in setting rules and expectations, students seemed most often to think of their professors as critics, rule makers, and gate keepers. Their roles require this. Students generally accepted professors' actions as they fulfilled these roles without much comment. However, students demonstrated frustration in several instances, particularly when they perceived the professor was acting as an unreasonable individual and not as a representative of the institution.

For example, at VendorBuilt College students are required to include their rubrics as part of their portfolio entries. However, students indicated they did not know of this requirement in time to save all of their rubrics. Most professors cheerfully helped them find what they needed to complete their important portfolio task. One did not and the students resented the lack of cooperation.

At Mason State, students were resentful and angry with the professors in charge of portfolio reviews for one of the external departments. The ones I met all said they had inadequate support to complete their task and cited a litany of complains. The most prevalent were a lack of instruction on how to successfully complete the task and a lack of helpful feedback on their best efforts. As a result of this unwillingness to offer feedback, Bob visited the portfolio lab for help

with his portfolio. The end result was satisfying for him and theoretically interesting. To fully understand, we must look at several of Michael's interactions with others earlier in the Summer semester at MSU. Michael was the main portfolio assistant throughout the summer.



Change Introduced to the System: Graphics website and background naming shortcut

Before proceeding, please recall from the beginning of this chapter that the reminder icon indicates the following incident will be analyzed as a change throughout the system.

The first related interaction is one between Michael and me in which I inadvertently introduced a new technique to Michael's individual activity system during the first week of the semester. It was late afternoon and a slow day in the lab. Linda just finished showing me her own portfolio and introduced me to a new website with free graphics. Michael was sitting at a nearby computer working to update MSU's portfolio website. Since there were no portfolio interactions to observe, I began using the computer in front of me to explore some of the backgrounds available from the new resource Linda had identified to me—combining them in different ways and looking at the results. I was using a timesaving technique I had learned from one of the eighth-grade student webmasters I had met in a previous job. Michael noticed what I was doing and asked how I was able to do it so quickly. I explained the method of changing page appearance quickly and easily by adding new images to the appropriate folder while retaining the same filenames. I used the Refresh command to demonstrate that using this technique allowed a webmaster to instantly update a website's appearance. Michael expressed his surprise that he didn't already know about this and we both returned to our separate tasks.

Several weeks later, Adam and Chris visited the portfolio lab for assistance with their portfolios. Michael provided assistance to both of these young men as they expressed their

frustrations with the guidance they received from the professors in charge of their external program. In particular, they asked for help to make their portfolios appear “more professional” although they did not know what the professor meant for them to do in order to accomplish a “more professional” appearance. Michael spent many hours with each of these young men, consulting and guiding their efforts. As a result of these interactions, Michael became nervous about students not having put enough effort into their work and he decided it was time to “up the expectations around here.” One afternoon in early June, Michael worked with Laura in a new way. He used the new graphics website Linda had shown us and the background naming technique I had inadvertently introduced to help Laura develop the page in Figure 20. At the time, Laura indicated that she intended to revise her existing pages using the new, fancier format. Michael also acknowledged that Laura probably had not planned on developing such a fancy portfolio page and that he had probably led her into it. I did not see the entire interaction, but the very large smile on Laura’s face led me to believe she was satisfied with the final result.

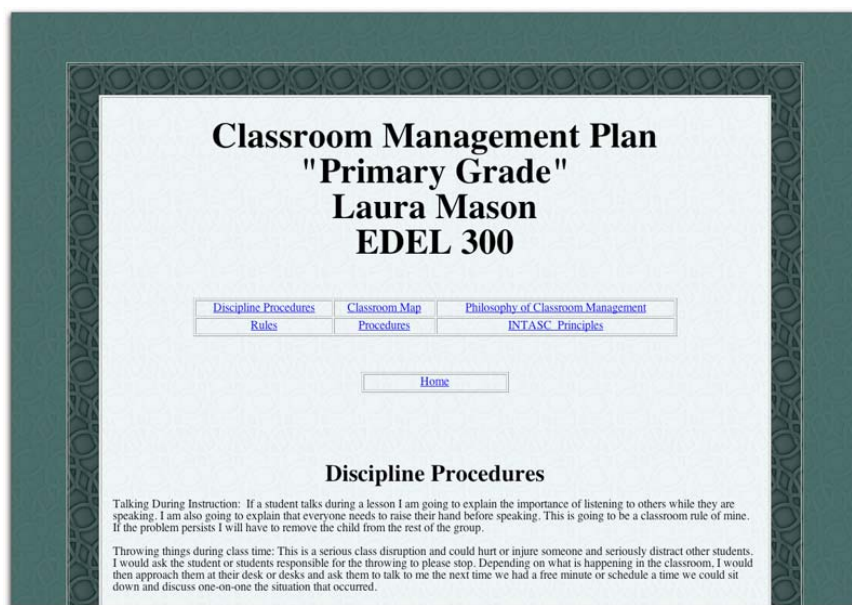


Figure 20. Laura's web page uses a more elaborate layout and a combination of background images.

Nine days later, Bob visited the lab looking for help with his portfolio. He is a student in the same external department as Adam and Chris and received the same advice—to make his portfolio look more professional. At the beginning of my observation, Bob was working on a very simple web page. He knew how to republish and refresh. He was working on a text-heavy term paper. He opened Netscape *Composer* to edit his portfolio pages and applied a background color to his pages and made his formatting consistent.

Bob brought some papers with him and used those, along with other people's portfolios, to work on his rationales. Eventually, Michael returned to the lab and Bob asked him for help. After Bob described that he needed to make his portfolio more professional, Michael took him to the graphics website he used with Laura and explained how the site organizes the images to show complementary graphics and layouts. Bob spent some time looking for a background set he liked and Michael helped him save the appropriate graphics.

Next, Michael helped Bob with the layout of the page. They moved everything from Bob's initial, plain page, into the new page layout. They worked together to edit the HTML source so that the file naming technique Michael learned earlier in the semester would work. They tried several different sets of graphics before Bob found the one he decided to use. They also developed a bulleted list for the front of Bob's portfolio. As Linda passed by, she suggested using some CSS so the links on the front page would not have the underlining generally associated with hyperlinks. Bob liked this idea and he and Michael turned their attention to finding the CSS code and made this change. Once the front page (Figure 21) was completed to Bob's satisfaction, he indicated he would like something a little less fancy for the other pages in his site. The two young men worked for a while and Bob was satisfied with the new format in Figure 22. When Bob indicated he wanted to upgrade each page to this fancier format, Michael

explained how he could develop a template file to streamline that process. Once Bob understood this, he applied the new template to each of his pages. (See analysis on page 221.)

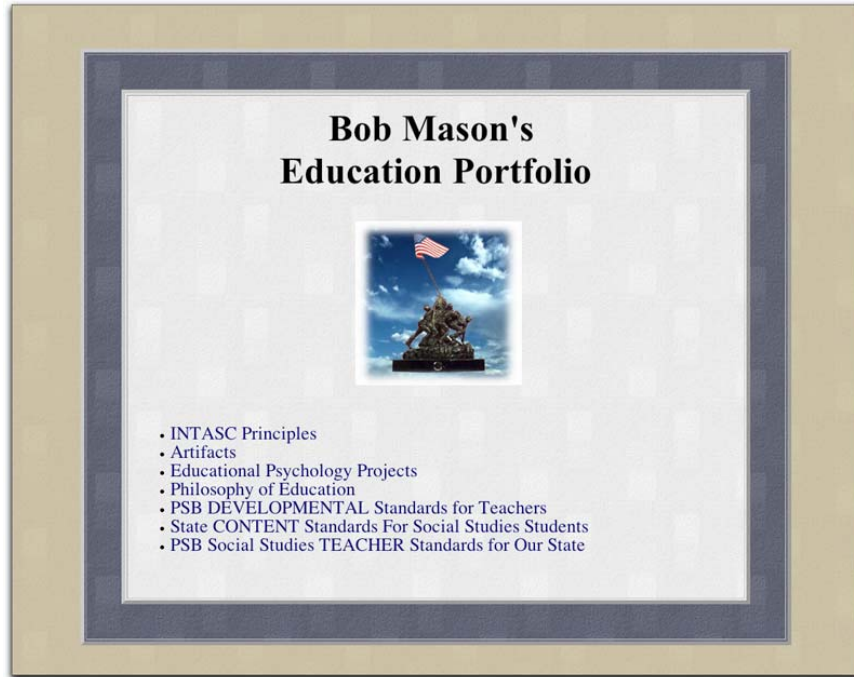


Figure 21. Bob's new index page using nested tables, complementary background images, and no underlining on the hyperlinks.

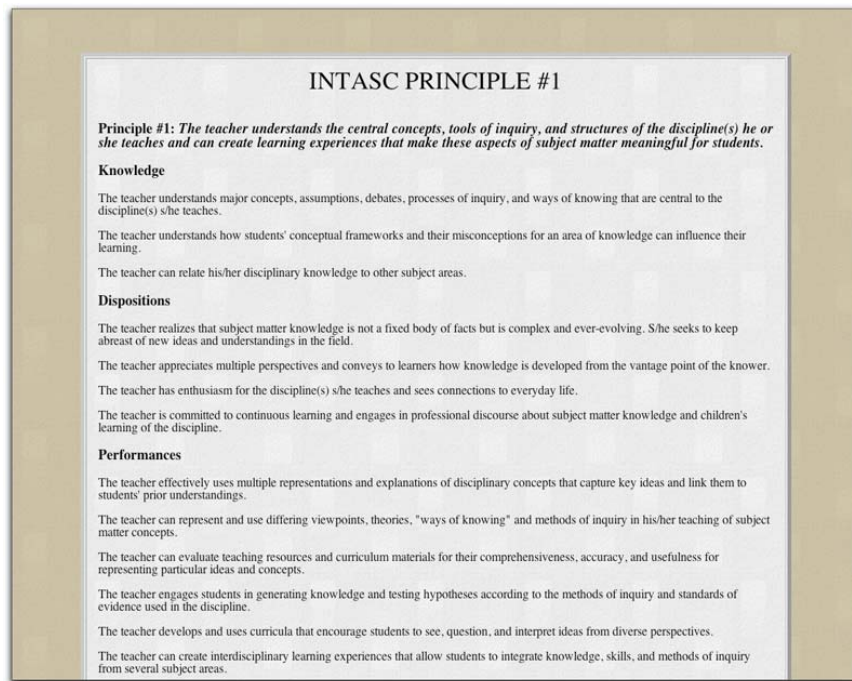


Figure 22. Bob's INTASC Principle page created using his less elaborate template file.

Finally, Bob started thinking about the score he thought we would receive on his new portfolio. He was confident his technology score would be a good one, but still worried about his content. He and Michael discussed ideas to strengthen the content as well.

Tools

Preservice teachers had a variety of tools at their disposal as they engaged in the portfolio creation task. The overview of each institution contained descriptions of most hardware the students used. This section of the chapter focuses on tools not already addressed. These include cognitive tools such as templates as well as the software used in the portfolio authoring activity. This section provides more details about the templates at each institution and how they were used. It also includes a summary of the primary software tools used in each program.

In the portfolio activity, professors, instructors, and staff moved back and forth between Community member and Tool. The chapter section on Community included descriptions of professors and staff in their dual roles as tools and community members. Their functions in the Tools node will not be restated here.

The Templates at MSU

There are three templates at Mason State: Elementary Education, Special Education, and Music Education. During Summer I 2005, the majority of students who were on campus were enrolled in the Elementary Education program. Consequently, this is the template about which I have the most information. Students received this template along with instruction on how to modify it using Netscape *Composer*. The template was a folder of simple HTML files and navigation links to structure the preservice teacher's portfolio. Files included an index page with the MSU logo, a page for the preservice teacher's resume, teaching philosophy, and a page for each INTASC principle. In addition, there was a page listing all of the INTASC principles and placeholder text for hyperlinks to artifacts. Pages were predominantly white with yellow boxes highlighting the standards. Most students in the elementary education program started with this template, modified the colors, and added pages for artifacts. Multimedia 14 from the Objects section of this chapter, or Appendix I, shows several portfolios built using this template.

Students in the Secondary Education program did not typically receive a template to create their portfolios. Instead, professors or portfolio leaders made in-class presentations to help these students begin their portfolios. Over the summer term, the Digital Portfolio Facilitator visited one such class three times. During those visits, she guided the students as they created the

basic framework for their portfolios. Students also learned to set up tables, modify color schemes, and create hyperlinks. At the end of this instruction, most students were able to proceed with their portfolio authoring task with only moderate additional assistance available at Hardware Hut and in the Digital Portfolio Support Lab. Although there was not a template, most portfolios created in this class had a similar structure but with a wide variety of color schemes.

Authoring Tools at MSU

At Mason State University, students primarily used Netscape *Composer* to create their HTML pages. Most students reported it easy to use because of similarities to the word processing software they already knew. The students explain:

DAVID: Well, I just got into it the other day and it seems to me that it's easy to do....from the one day I've used it, it was very user-friendly. It was easy for me to navigate what I had to do in order to make my pages for my portfolio.

GABRIELLE: You can download Netscape for free and that's what we composed the pages in. Then we published through a program called *Fetch*. The only thing is that Netscape is free, so it crashes every so often. You just have to save frequently which is something you're supposed to be taught for a long time anyway. ...There's not a lot of features. Its got the basics. You can put a background in, change your font color, or change your fonts. You have to be careful with your fonts because not every font is available on every machine. Change colors, underline, italicize, the basics.

In addition to the ease of use, Monica was pleased with the results:

Well, I love how it turned out. I love how it transferred to...when I publish that it worked out nicely. It wasn't like—things weren't all over the page—I don't know what you want to call that. The structure of it when I put it on Netscape and then when I published it was the same. It wasn't every which way, so that was nice. And then some of the style things like the formatting, some of the tools I used with that were nice because I could be creative and had the ability to do things like that. Those were good things. I'm really new at it, so I'm working on it. I'm sure when I graduate and I can reflect on it then, I'll be like “wow!”

Although Netscape is the recommended HTML editor, a number of students use *Dreamweaver* as well. Their reasons vary but many of them have used it in another class. Some, like Nicole, started their portfolio in another class and see no reason to switch. Adah, on the other hand, wants the additional capabilities *Dreamweaver* offers: “I got *Dreamweaver* because, like I said, I want mine to be much more creative—artistic in appearance. So I felt I needed *Dreamweaver* to pull that off. “

Finally, other students used Microsoft *Word* to create their web pages. Perhaps this worked for some, but all students visiting the lab during Summer I reported have problems with web pages created in Microsoft *Word*. Sarah explained her situation as she spent hours cleaning up those *Word*-related problems at the end of the semester. Early in her program, a professor outside the Teachers College taught her to create web pages using Microsoft *Word*. As the university need for server space grew, Sarah was one of the students who needed to move her files from one server to another. “The files wouldn’t copy right...I’ve got all of these funky symbols all the way through my website now. All of my pages have all these weird symbols that I have to go through and delete.”

Shannon has seen the same “funky symbols,” but attributed the problem to moving between her Windows and Macintosh computers. Because of this problem, she resolved to do all of her digital portfolio work from a Macintosh to prevent problems. Linda cautions students against using *Word* when she speaks to students in classes and in the labs. It is her belief that this is an interaction between *Word*-generated HTML and Netscape *Composer*. In her instruction, she strongly cautions students about using Microsoft *Word* in this way. Amanda echoes Linda’s advice: “I’d say always be sure you create your pages in Netscape. Don’t think you can create a page in *Word* because it just causes problems.”

Once their web pages were created, students at Mason State used *Fetch* to publish them to their server. For some students, remembering this step was the most challenging part of the process. Some students found the whole process very complicated. David longed for one piece of software to handle both creating and publishing his pages. In contrast, both Gabrielle and Amanda praised the drag and drop ease of using *Fetch*.

At Mason State, students created their pages without Internet access using local copies of files and their favorite HTML editing tool. They only needed Internet access when they uploaded their pages to their web server.

For data collection and reporting requirements, professors and instructors use *Rubigrade*, a tool developed in-house. For the most part, students seemed unaware of *Rubigrade* and did not see it as part of their portfolio-authoring experience. In fact, when asked about it in the final focus group, the students who knew about it were almost dismissive of the question—as if it wouldn’t be important for me to know about *Rubigrade* in trying to understand their portfolio experiences. At Mason State, data collection and aggregation is nearly invisible to students and has minimal impact on their experiences.

Supplemental Tools at MSU

No matter the HTML editing tool they chose to use, students also used other tools for portfolio-related tasks. Many students used Microsoft *Word* to draft paper versions of their papers, then copied and pasted from their original word processing files to their HTML pages. They converted *PowerPoint* presentations and *Inspiration* documents into HTML to include in their portfolios. Most students used *Adobe Photo Elements* to edit and resize digital photos and

other graphic elements. Amanda used *iMovie* to create the movie highlighting her student teaching experience. In their homes, apartments, and dorm rooms, students also used *Windows* computers for some of the same tasks. Because *Fetch* is only available for Macintosh, *Windows* computer users used the Windows FTP client to publish pages on their server. It seemed the majority of the students used their program-required iBooks for portfolio tasks.

Tool-imposed Affordances and Constraints at MSU

At Mason State University, students rarely spoke about their tools as constraining what they were able to do. Some, like Gabrielle, wished they could do more if they could only find out how. “I want to make a concept map for my education philosophy so when you scroll over something, something would pop up with what I thought about it. But I just couldn’t find the software to make the concept map with pop-up menus.” Amanda had heard about Macromedia *Flash* and wanted to find time to learn it and include something she created using the program.

Others, like Tiffany, talked about being limited by their skill set, not their tool set. “The capability that might be there, but I don’t know is to add a movie or a clip. I’m pretty sure we’re capable of doing it, but I have no idea how to begin to do something like that.”

The constraint students were most cognizant of was server space limits. They were keenly aware that their server space was limited to 100 MB and they looked forward to when it would be raised to 1 GB. According to the rumors on campus, the increased space would be available soon. Until that happened, space constraints impacted some of their decisions. Gabrielle explains: “Some people put 15 artifacts in there at the end of their first semester. I don’t think I want to overdo it in case I find an artifact later that I wanted to addbecause of

the space thing.” Sarah was similarly nervous about server space: “Yeah, and you have to be careful with what you put on there because there’s not much room.” During our thinkaloud work session, Amanda had to remove some of the content of her portfolio to make room for the movie file on the server.

The Templates at VBC

At VendorBuilt College, several templates were in use. Dr. S, the Portfolio Coordinator, created the main template. The template had a page for each required section including a splash page, teaching philosophy, matrix of required artifacts, page for each accomplished practice, field experiences, credentials, letters of recommendation, lesson plan submissions, and internship evaluations. Each page had extensive advice to help the student prepare the specific page. For example, pages for each accomplished practice reminded students to place the required artifact, rubric, and introductory information on the page. The section for student reflection offered questions to prompt reflection and specific instructions to include the language of the preservice indicators. Additionally, the reflection area of the template provided advice on presentation to improve visual appeal. Finally, standards for each section were pre-selected for the students. An example page is displayed in Figure 11. Multimedia 15 from the Objects section of this chapter, or Appendix J, shows several portfolios built using this template.

Other pages of the template provided similar levels of details for students to complete their task. The template is an example of a fading scaffold for the portfolio task in that students began with the complete template and gradually deleted the template text as they replaced it with their own. Thus, it faded. In addition to the main portfolio template, another professor also

created two templates for students to use for projects in her classes. Each of those templates provided the structure the professor desired, along with details about what students should place in each section.

Regardless which template they used, students had three different ways they could provide the desired information. Typically, students provided introductory information in a text entry field that displayed as part of the HTML page once completed. Many students added electronic copies of their original paper submissions as attachments. Several students provided scanned copies of the paper documents. In a few instances, students entered the complete content into the text entry field so it would display as part of the HTML page a portfolio viewer would see.



Change Introduced to the System: Student Created Template

The final template in place at VendorBuilt during Fall 2005 was for a Classroom Management Plan students must complete. Although not all students use this template, it is of theoretical interest. It is the first innovation to the VBC activity system I will highlight in this chapter. Before explaining how the innovation occurred, I will explain how I became familiar with it.

The semester was more than half over and students were making good progress on their portfolios. It was an open lab work session and Hannah, a member of the *Professional Development Seminar* class had woken early and arrived on campus several hours before her scheduled class. The day was an open lab work session, so Hannah had no problem finding an available computer in the class before hers. She sat near Stephanie, a younger student in the earlier class. As the class time progressed, Hannah and Stephanie worked side by side. Before

long, Stephanie noticed something Hannah was doing and asked her how she did it. As the two young women started a conversation, Hannah demonstrated part of her portfolio to the younger Stephanie who was particularly interested in how Hannah had represented her Classroom Management Plan, exclaiming “That’s so smart!” and “so awesome.” Not surprisingly, Stephanie asked how Hannah had accomplished this representation and Hannah told her that it started with a template which she offered to share. Of course, Stephanie happily accepted.

Hannah shared the details of the template with me. A student developed this Classroom Management Plan template. The professor required this project to be submitted on paper. Like her classmates, this young woman who created the template was required to add her Classroom Management Plan to her electronic portfolio. She chose to convert it to a customized *CommercialFolio* multi-page document rather than simply attach a word processing document. According to Hannah, she eventually turned it into a template and shared it with a friend who was in the class after hers. This person shared it with everyone in her class and, as Hannah puts it, “We just keep passing it down.” The student had a lot of detail in the various sections of the template, including instructions and guiding questions. I asked Hannah about that and she told me she believed the template author added this detail by reviewing her course notes and extracting relevant information.

Meanwhile, Stephanie was excited to have this template for her own Classroom Management Plan and over the next days she started carefully moving text and images from her own word processing document to this new template. After seeing the template and hearing Hannah’s story I realized I had seen it before. Later, I learned Angela had created the template. Multimedia 19 demonstrates the Classroom Management Plan and template Angela created. The portfolio activity system has expanded to include this template, although adoption was not yet

complete. Refer to Appendix K if unable to play the movie in Multimedia 19. (See page 228 for the analysis of this change.)



DESCRIPTION: This video is an on-screen tour of Angela's Classroom Management Plan and the template she created and shared with her peers. The transcript and associated figures can be found in Appendix K if you are unable to play this video.

Multimedia 19. Video tour of Angela's Classroom Management Plan and template (04:05).

Matrix of Required Artifacts at VBC

The matrix of required artifacts is another important tool at VendorBuilt College. Throughout the semester, I saw students referring, manipulating, and annotating the matrix. Students seemed to have it with them at all times. However, only Tucker showed me the very copy he had picked up during his Freshman year. He had kept track of it throughout his time at VBC, highlighting items on it as he progressed through his classes. Many of his classmates did interesting things with this matrix. Mallory kept hers with her at all times throughout her final semester of classes. Her binder had a clear plastic sleeve on the outside cover. She used that sleeve to store her matrix so she would have it easily accessible to notate ideas about what to include in her portfolio. She used a system of notations to track her progress. (See Figure 23.)

AP	Artifact	Format	Grade	% Grade
1	EDU 203 Test Construction Project	LT project	147/150	98%
2	EEL 431 Book (current class)	n/a	n/a	n/a
3	EDU 406 Personal Orientation (current class)	n/a	n/a	n/a
4	EEL 341 Art Activity File	paper	43/45	96%
5	ESL 315 Ethnography (current class)	n/a	n/a	n/a
6	Practicum Experience and Forms	paper	passed	n/a
7	EEC 209 Connections Paper	.doc	13.6/15	91%
8	EDU 321 Unit Plan	paper	96/100	96%
9	EDU 357 Management Plan	.doc	55/60	92%
10	EDU 321 Lesson Plan	paper	97/100	97%
11	ENG 301 Grammar Theory (current class)	n/a	n/a	n/a
12	EDU 324 Multimedia Project	LT project	98/100	98%

Figure 24. An early version of Kayla's color-coded matrix indicating portfolio items needing work.

Matrix of Artifacts (final -incomplete/current projects)

AP	Class	Artifact	Grade	% Grade	Other Possible APs	Missing	Format
1	ESE 365	Language Sample Project	n/a	n/a	1	everything	.doc
2	EEL 431	Self-Authored Book	14.1/15	94%		illustrations, rubric	mixed
3	EDU 406	Personal Orientation	21.6/25	86%	4,11	rubric	.doc
4	EEL 341	Art Activity File	43/45	96%	5,7,8,9,10	everything	paper
5	ESL 315	Ethnography	n/a	n/a	2,4	rubric, reflection	.doc
6	n/a	Practicum Evaluation Forms	n/a	n/a		link, reflection	paper
7	EEC 209	Connections Paper	13.6/15	91%	8		.doc
8	EDU 321	Unit Plan	96/100	96%	10		paper
9	EDU 357	Management Plan	55/60	92%	2		LT project
10	EDU 321	Lesson Plan	97/100	97%	1,8		paper
11	EDU 203	Test Construction Project and Test Evaluation + EDU 324 Newsletter	147/150 98/100	98% 98%	1	intro, rubric, reflection	LT project
12	EDU 324	Multimedia Project	98/100	98%	2	rubric	LT project

Figure 25. A later version of Kayla's color-coded matrix her progress toward completing her portfolio.

Authoring Tools at VBC

At VendorBuilt College, students were required to purchase a \$99 subscription to *CommercialFolio*. They believe this gives them access to the service for four years, but the company website indicates an online purchase is good for three years. For the duration of the

subscription, students have unlimited access to their account where they can create new projects, edit existing projects, and share projects for review by professors and other service members. Professors can create templates for student use as already described. In addition, professors can create rubrics and grade the preservice teachers' work against those rubrics. The *CommercialFolio* service maintains this data and makes it available to the institution for their reporting requirements.

In order to use the *CommercialFolio* subscription service, students need Internet access. Most students had Internet access in their homes and dorm rooms but those who did not needed to plan to work on campus or some other place with Internet access for their portfolio work sessions. This is the reason Anne ended up sitting outside the library with her roommate's laptop and wireless card after closing time. To work around the necessity for an Internet access, some students created their documents using other software and attached those documents to a page developed using *CommercialFolio* or to their VBC-supplied template. Students also had the option of copying their work from another file and pasting it into a *CommercialFolio* text box when they next had Internet access. This approach produced very inconsistent results and caused a lot of frustration for students. More comments about this problem occur later in this chapter.

Students at VendorBuilt College use Microsoft's *Internet Explorer* to access the *CommercialFolio* site. This is the only browser available on the campus computers. At their own computers, however, several students preferred Mozilla's *Firefox* for various reasons: Tucker used *Firefox* because of its effective popup blocker and to take advantage of tabbed browsing¹⁰.

¹⁰ At the time this dissertation was written, not all web browsers permitted tabbed browsing.

Tabbed browsing allows the user to open multiple windows in one window of their Internet

Astra and her roommates switched to *Firefox* because “my roommates discovered that *Internet Explorer* can put viruses on your computer, so the whole room changed.” In addition, students used Microsoft *Word* and software to run the scanners in the labs. They also used photo editing software such as Microsoft *Paint* and Adobe *Photoshop* to crop and resize photos and images.

Tool-imposed Constraints and Workarounds at VBC

At the first focus group interview, students expressed a number of frustrations with their *CommercialFolio* tool. Mallory was unhappy that it behaved inconsistently for her: “One day it will work perfectly and the next day I try to change the font and it won’t do anything....It’s just like kind of rebellious towards me.” Cathy thought *CommercialFolio* was more complicated than necessary, specifically talking about images:

And then, adding pictures and that seems to be really complicated. You have to have the picture, you know, like photo ready. Ready for the portfolio when you put it in there. You can’t do anything to it once it’s in there.” [She is referring to the fact that image size can not be modified within *CommercialFolio*...I think part of what scares me about it is working with these images, but once I put everything in, it’s final. You can’t change images once they’re in there and you have to go through the whole thing and you realize you don’t like the size of it and then to completely delete it and go back in to where you had the image saved and change it to whatever size you want. I just feel that with everything, it’s so final once it’s in there....You can do it, it just takes more time. It’s just so final and I’m scared to touch it when I might lose it by hitting backspace or something and it’s gone.

browser. They can then switch between these windows by using a series of tabs located near the top of their browser window. Advanced Internet users can avoid long page load times and can easily compare different web pages to do comparison shopping and web development work.

Mallory elaborated:

A portfolio of pictures and words. They're called text and image sections and yet the image can only go in the right or the left or the top or the bottom. And it has to be this certain pixels and they won't let you tab it...I want my picture where I want it and I don't want it over here or over there with my words wrapping.

Tucker missed the keyboard shortcuts he uses in Microsoft *Word*. Mallory wanted to be able to use the tab key to indent. Phoebe and Tucker talked about how if they hit backspace too many times, they can lose an entire section of work. Phoebe wanted to put an edited video in her portfolio and was unsure *CommercialFolio* could accommodate that. Even if it could play the movie, she worried space constraints would limit her to too short a movie. Several students raised the issue of space constraints throughout the semester.

Anne didn't like how her portfolio looked and wanted to be able to personalize her portfolio more than *CommercialFolio* allowed:

Aesthetically, I think it's really ugly. (She giggles as she says this) That's a major concern for me because, starting off—just because I did not like it at all—the way it's set up and it's very—I don't know—it's very cut and paste and not personal at all, even though we have a splash page. There wasn't a lot of room to personalize it. There's a limited number of color choices for the background of your portfolio. I think there's maybe five. The set up in the layout of itself is uniform for every single person. It makes it easier to do, but at the same time, it doesn't make me want to do it. It doesn't increase my motivation because it just doesn't feel like a part of me. I feel like I'm doing it just because I have to.

By the end of the semester, Anne had determined how to work around some of *CommercialFolio*'s constraints. For her, finding a way to display multiple images in one section was the most satisfying part of the portfolio experience. She says:

I was able to use my own creativity to shape how I presented things within my portfolio. Actually, probably as well for *doing* that, and being *able* to do it, and then on top of that, being *allowed* to do it . . . so that it looked better and then I felt more ownership because the organization became mine then and not what was mandated by the college, because I thought it looked ugly. I really did...I felt really accomplished at that and I got good feedback on that from teachers outside

the presentation—from both Dr. F and Dr. P and later Dr. D who did look at my portfolio. They really liked it because they haven't seen that before . . . I just feel like more organization individual to the person should be allowed and should be encouraged.

Some students were also unhappy with how they had to edit sections of their portfolio.

Mallory had a suggestion for how this feature should behave:

And that's something I wish they'd change because when you go to edit this section, it's on that same page. If they would open it up in a new window so that you could see what it looks like in your portfolio and then you could edit over here...you could see the different sections, like when you're doing your reflections at the bottom, you could look back up at this thing you have posted so you could see what you were reflecting on.



Change to the Activity System: Browsing in Multiple Windows

Tucker had the solution for Mallory. He told her, “You can always open it in a new window yourself. Instead of clicking on the link, right-click on it and it will open in a new window.” Mallory started using this tip the next day and incorporated it into her new work routine throughout the rest of the semester. Various students learned how to do use multiple windows to do their editing. They passed the tip along to others. As the semester progressed, I saw increasing numbers of students use multiple windows to review and edit their work.

Displaying Graded Rubrics. Students at VBC were required to include their graded rubrics for each required artifact. In many instances, they were able to scan a paper rubric they received from a professor and include it as an attachment or image. However, some of their projects had been graded within the *CommercialFolio* system. The system was designed to keep those private but students needed to make them public to comply with their institution's requirements.

Dr. S confronted this challenge in class one day. She told students how previous students had faced the same difficulty. Others had called *CommercialFolio*'s tech support where they were told this capability wasn't supported and that "they shouldn't do that." Dr. S also told current students that a previous student found a workaround for this and that VendorBuilt students used it successfully. However, *CommercialFolio* closed that workaround and now she wasn't sure how students could work around it, but suggested they print the *CommercialFolio* rubric on paper and then scan to include as in image or attachment.



Attempted Change to the Activity System: View and Copy HTML Source for Rubrics

Alicia was not satisfied with the plan to print a copy and then scan her rubric. She worked to find a better way. She tried to copy it, but didn't succeed. Then she noticed the Source button on the *CommercialFolio* toolbar. Since Alicia spends a lot of time on myspace.com¹¹ and has learned how to edit HTML through her membership on that site, she decided to try using the

¹¹ Myspace is a popular social networking service that allows users to create profiles, upload pictures, send email, create and share journals with friends in your network. Myspace.com uses profile pages created in HTML.

HTML source to display her rubric. She navigated to the rubric page, viewed and copied the source from the rubric page. Then she returned to the page to which she wanted to add her rubric, entered Source mode on her text box, and pasted the source from her clipboard. When she saved her work, she was happy to see that it had worked.

In the next class, Dr. S asked for a volunteer to show what they had been working on. Alicia wasn't sure whether or not her rubric workaround would work again so she didn't volunteer to demonstrate hers. Coincidentally, Dr. S asked Alicia to volunteer unaware of the workaround Alicia had tried. Alicia agreed to show her latest efforts. Since Dr. S hadn't yet seen this workaround, she was very surprised to see what Alicia had accomplished. She asked Alicia how she did it and Alicia demonstrated this technique to the class. Before the next class meeting, Dr. S wrote the instructions and posted them on the course website. She also demonstrated Alicia's technique to students in the other classes. Other students also tried this method. Some found it too difficult to use. Others continued to use it. Later, Alicia admitted that she was no longer using her copy and paste technique for her rubrics because *CommercialFolio's* display of tables is unstable. Many other students who used this approach found *CommercialFolio's* tables behaved inconsistently. Most abandoned this workaround despite the initial promise. (See analysis page 223.)

Alicia's fiancé, a graphic designer, helped her create an image using *Excel* and *Photoshop*. In his work session, Tucker tried to use *CommercialFolio's* table tool to display his Matrix of Required Artifacts. When he discovered the erratic behavior of *CommercialFolio's* tables, he used a screen capture and photo editing software instead. (See analysis on page 222.)

System Update in Mid-Semester. The front page of the *CommercialFolio* service announced a system upgrade after the semester was well under way. Students noticed the

announcement and grew concerned. Several of them had previously lost work in the *CommercialFolio* service and the thought of a system upgrade made them very nervous.

Nancy shared her story, telling me she lost work in the Spring and showing specific examples of projects in other classes that were empty because the work was lost. Many of her friends lost their work, too. Nancy was deeply concerned this could happen again. She didn't see any point in investing time in something that is so fragile and so unreliable.

Tucker shares:

I think two years ago, about 50% of the students here lost everything they had done and that was when I was in Instructional Design class and I was one of three people in the class that had everything saved on a jump drive or on a zip drive. Everybody else had uploaded it and deleted off their hard drive thinking, "I can always download it later if I need it."

After the upgrade, several problems showed up immediately. Anne's portfolio offers an example of two of them. For several students, they were unpleasantly surprised to find scroll bars—both vertical and horizontal—in unexpected places. They were also disappointed that text wrapped so closely to images and that there was no way to fix either of those problems. See Figure 26.

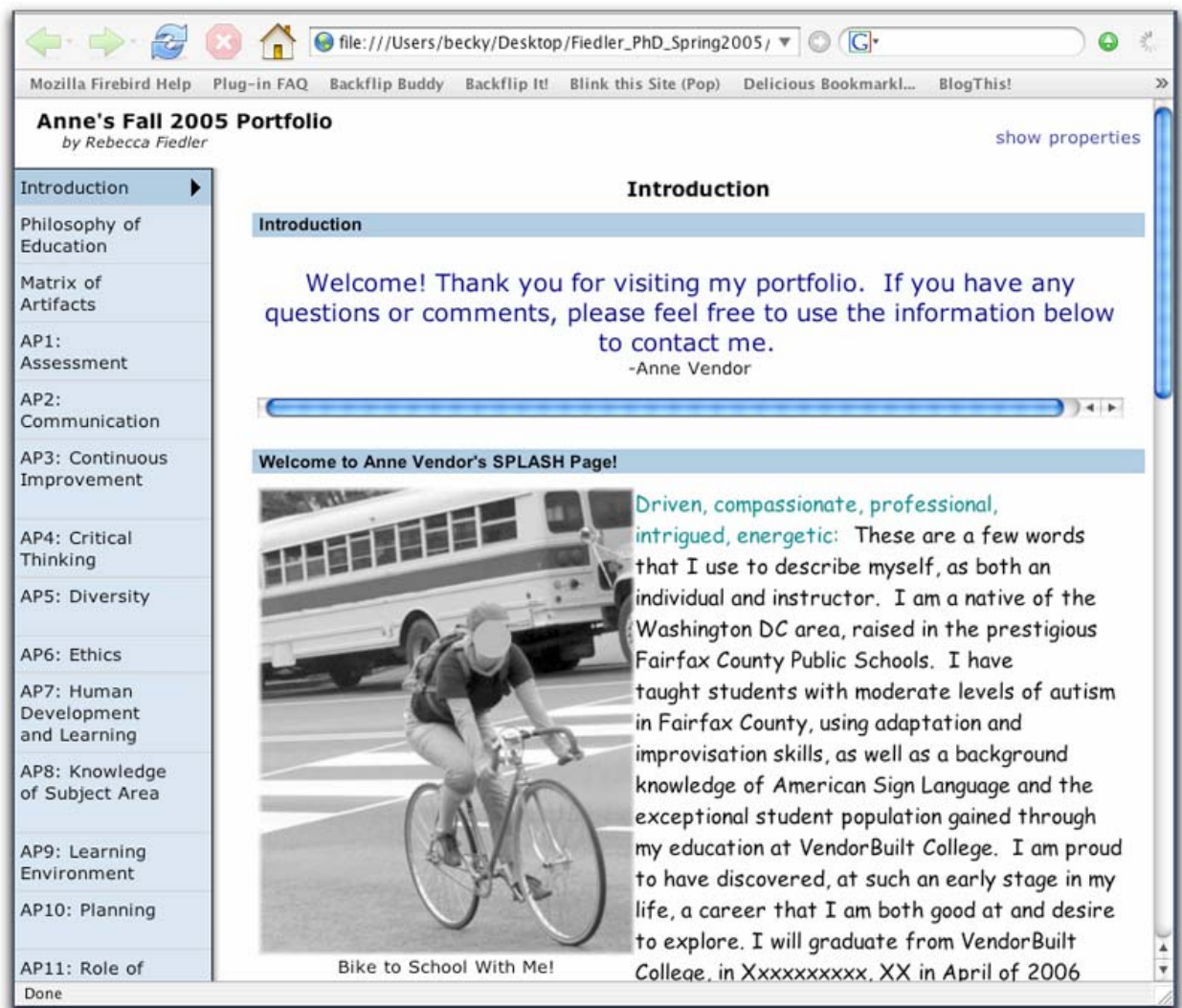


Figure 26. After the *CommercialFolio* upgrade, students found unexpected scroll bars and text too close to images.

After the upgrade, students reported difficulties adding images to their portfolios where they had previously been able to do so. Someone called the toll-free technical support phone number where they learned a workaround for this problem - to put a blank or period in the page section. Dr. S posted this information on the course website for all sections.

In addition to these specific problems, the students reported the system seemed to run more slowly after the upgrade. As a specific example, Mallory's thinkaloud work session was scheduled less than two weeks after the upgrade. During her session—not scheduled during a

planned system outage—the system was so unresponsive that she was unable to work for the majority of the hour we spent together. The computer she was using had Internet connectivity and seemed able to navigate to other sites on the Internet. She was able to log in to her *CommercialFolio* account, but nearly every time she clicked Save or Finish, the system failed to respond.

Furthermore, the ability to right-click and then copy or paste appeared to quit working reliably after the upgrade. A student commented that, “the upgrade hasn’t really been an upgrade after all.” Many students relied heavily on using the mouse to execute copy and paste commands and found this change in functionality upsetting.

This time was particularly stressful for students as they tried to balance the competing priorities of completing their portfolios and several large projects in other classes. Slow and unreliable system performance made an already stressful time even tenser.

Displaying the Matrix of Required Artifacts. Another challenge students faced had to do with displaying their matrix of required artifacts. Many students chose to decorate their matrix with colors to complement their portfolio color scheme. However, one young lady in particular had problems getting her basic matrix to display properly. She came to class early complaining that the matrix of artifacts was giving her problems all day. She told Dr. S that she had her matrix in good shape and then edited a nearby paragraph on her *CommercialFolio* page. Then the matrix started acting flaky and she had already spent more than an hour trying to fix it. This occurred on a day the *CommercialFolio* service was running particularly slowly and students across the lab complained they spent more time waiting for the system to respond than they did working with it. The girl with the broken matrix was very upset and spent the entire class time trying to fix it. She had help from the Instructional Design professor who had entered

the classroom for an unrelated reason and help from Dr. S. Despite the additional help, she could not restore the matrix to an acceptable condition. After class, she continued working to resolve this issue. Ultimately, she posted the matrix as an image rather than the table she originally intended. She used trial and error to find a combination of table size and image size she found satisfactory. She estimated she spent three hours trying to fix this problem after it broke.

Many students found *CommercialFolio*'s handling of tables—whether created using copy and paste or from HTML source—to be unstable and unreliable. Some simply added their matrix as an attachment. For those interested in presenting the information visually, most choose to use a screen capture technique.

Displaying Multiple Images in a Section. From the first interview at the beginning of the Fall semester, it was clear students found the *CommercialFolio* limit of one image per section unsatisfactory. In class and lab sessions, students talked about their displeasure. Then, one day something exciting happened. It was a busy chaotic day. The following excerpt is from my field notes:

4:02 pm: One of the girls shouts for Dr. S. She's [the girl] very excited because she has two pictures in the same section of the page. This is not something *CommercialFolio* supports and it turns out she did it by copying and pasting some text and a picture. It was all very accidental. She also had another picture already attached. When she clicked finish, both pictures showed up. Several students come to her computer to see this.

See Figure 27.

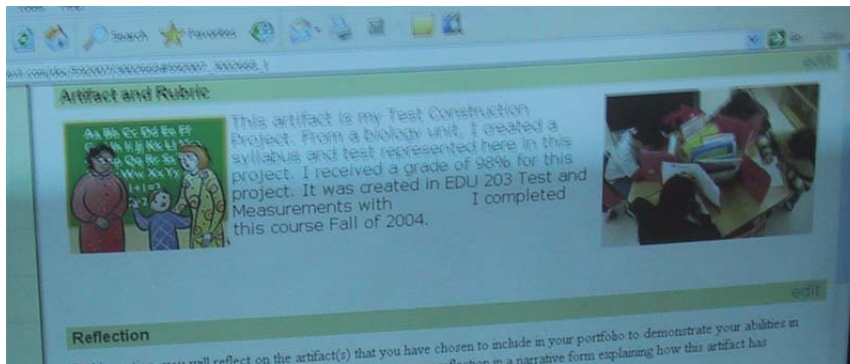


Figure 27. Photograph of accidental success at putting two images where only one should be permitted.

The girl who did this could not remember what actions preceded it. Other students, the young woman herself, and Dr. S all tried to replicate this without success. This took place in late October.



Change to the Activity System: Displaying Multiple Images in a Single Section

Recall the movie from the objects section of this chapter? In the movie, Anne has figured out a way to display multiple practicum evaluation forms in one section. By the time I watched her thinkaloud work session, she had perfected her new technique by practicing it on her Test Construction project.

She explained the following in bits and pieces throughout the work session. Anne no longer had her original Test Construction project in electronic format. She decided to scan her paper copy and upload it into a free web-based photo hosting service. She needed to try several photo hosting services to find one that worked the way she wanted. Some required Anne's portfolio viewer to log in to the photo hosting service before allowing them to view the images. That was unsuitable for Anne's purposes. Then Anne found a service that didn't require login, but constructed their URLs in a way that included advertisements for their services. That was

also unacceptable to Anne. Other services charged and Anne did not want to pay. Ultimately, she identified a free photo hosting service and a way to edit the URLs to eliminate the advertising. She uploaded the scanned images of her documents.

Next, she edited the HTML, setting her image source tags to point to the photo hosting service URL for the image. Ordinarily, these image source tags point to images stored in the same folder as the web page. In the case of *CommercialFolio*, these tags are automatically generated. By editing the tags herself, Anne was able to put as many images as she wanted in the same section. A snip of a few of her edits in the *CommercialFolio* code for her Test Construction Project follows. This code displays five images consecutively on the web page. The edited URLs pointing to the hosting service are highlighted in yellow:

```
<table style="table-layout:fixed;width:100%;_width:auto"><tr>
<td><div style="width:100%;overflow:auto">
<IMG src="http://i6.freephotohost.com/albums/y223/v_anne/education
materials/Test Bank By Type/Multiple Choice/1.jpg">
<IMG src="http://i6.freephotohost.com/albums/y223/v_anne/education
materials/Test Bank By Type/Multiple Choice/2.jpg">
<IMG src="http://i6.freephotohost.com/albums/y223/v_anne/education
materials/Test Bank By Type/Multiple Choice/3.jpg">
<IMG src="http://i6.freephotohost.com/albums/y223/v_anne/education
materials/Test Bank By Type/Multiple Choice/4.jpg">
<IMG src="http://i6.freephotohost.com/albums/y223/v_anne/education
materials/Test Bank By Type/Multiple Choice/5.jpg"></div></td>
</tr></table>
```

Anne constructed the Field Experiences section of her portfolio in a similar way during the thinkaloud work session. Although Anne added this technique to her personal workflow, it did not spread to others. Anne chose not to share it because she was nervous it might stop working at some point in the future.

In a parallel development, Alicia, the young woman who used the HTML source code to display her rubric, found a different work around for the multiple images problem. Her discovery was accidental. The following is how events unfolded for Alicia:

Alicia had been working on her computer and copied a picture she found on the Internet. She then moved on to another task using Microsoft *Word*. She selected everything she'd done in *Word* and thought she had copied it because she wanted to put it in her portfolio. When she switched to *CommercialFolio* and the edit box, she hit Paste and got the picture she had copied from the Internet instead of what she had expected. This was a big surprise to her. Courtney, her friend sitting nearby, excitedly urged her to click the Save button to see if *CommercialFolio* would save the picture in this new way. It did. She thought about what had happened and realized she might be able to replicate her accidental discovery. She tested the service to see if she could make it happen again. She could. As she continued exploring, she also realized that if she right-clicked on the picture, she could choose Image Properties from the context menu. The resulting dialog box allows some additional control of the copied image. See Figure 28. Note that this is merely an example of the dialog box for the reader's benefit and not an artifact from Alicia's work session.

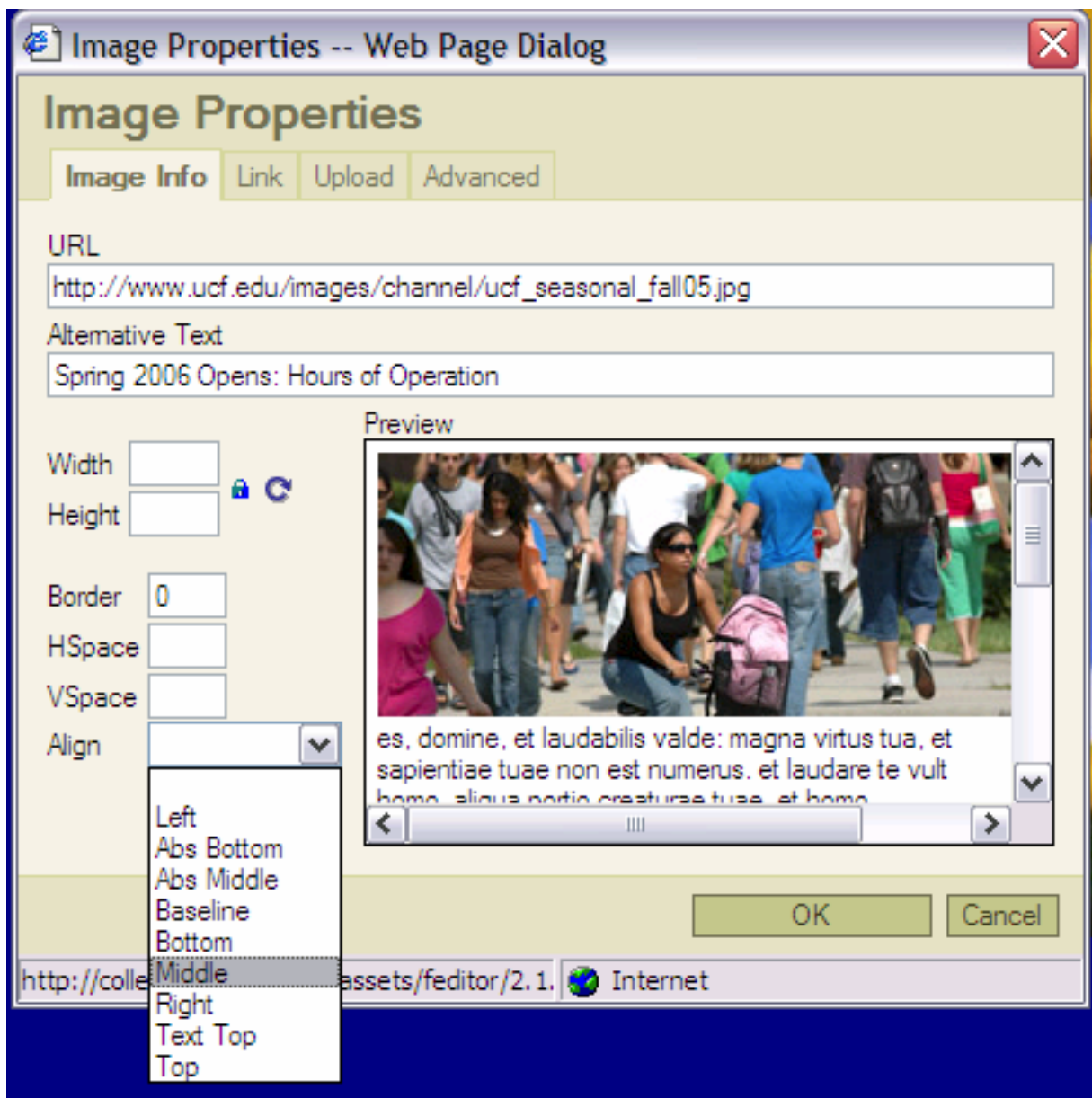


Figure 28. Dialog box for image properties in one of Alicia's *CommercialFolio* innovations.

This photo was one of the small photos available on UCF's main home page in January 2006. Notice that the URL is the web location of the photo and that Alternative Text field displays the Alternative Text for the photo in its original location. It can be edited. Also notice that there are options to change the dimensions, spacing, and alignment. Finally, near the top, there are additional tabs providing more control over both appearance and behavior of the image.

As Alicia and Courtney figured out how they could replicate this accidental discovery, she and Courtney called Dr. S over to see it and to show her how to do it.

Alicia spent more time thinking about this newly learned capability and how she might use it. She reflected on her knowledge from myspace.com and realized she could use the same free photo hosting service Anne used. Alicia uploaded her own photos to the photo hosting service and used copy and paste commands to include them in the *CommercialFolio* edit box. It worked, except that clicking on the photo took the portfolio visitor to the free photo hosting site. When Alicia realized this, she was able to eliminate that hyperlink by editing the dialog box.

Once Dr. S learned how to put multiple images in one section, she demonstrated it to other sections of her classes. For seniors, it was too late for them to incorporate into their portfolios. The younger students seemed more interested. This happened so near the end of the semester that, by the time I left, it was not clear whether this change to the activity system would be sustained. (See page 229 for the analysis.)

In an interesting side note, Dr. S also called the company to ask them why they had not shared this new capability with their subscribers. She reported back to the students that the person she spoke to at *CommercialFolio*'s tech support phone number "was as surprised as we were."



Resisting a Change to the Activity System: Word or Word Pad

After the upgrade, students begin noticing strange formatting problems with their work. Perhaps it was only a coincidence that it happened so soon after the upgrade, but students were quick to attribute the problem to the recent upgrade. The problems surfaced at the end of October. The astute reader will remember that the system was running very slowly and student

frustration was running high. The pervasive formatting problems exacerbated the other performance issues. Following are some of the scenes from field notes on classes and labs during this time.

October 24 and 25: Students are having formatting problems with *CommercialFolio*. This seems to have happened after the most recent upgrade. All the text is on the left-hand side of the screen, but sometimes refreshing the browser will solve the problem. The company is aware of the problem and working to fix it.

Another student says:

I swear I had a computer demon. I tried three different computers and I thought my laptop had a virus. *CommercialFolio* was so slow this weekend. It was driving me crazy. I finally gave up...I copied and pasted some stuff into *CommercialFolio* and it added all of this extra space, so I went in and pressed back, back, back, back, and it went back to the previous page and I lost everything! And that happened four times! So, I finally figured out that I had to do it slowly or *CommercialFolio* would think I wanted to go to a previous page.

October 26: Stephanie has been here since 9:00. Originally, she only intended to be here a short time. However, two hours later is still working on getting the same project into *CommercialFolio*. This is something she has copied from Word and is trying to paste, but the formatting is giving her a hard time.

October 27: One of the students believes I work with the company (she was not alone in holding this misunderstanding). She pulled up a page that *CommercialFolio* didn't format properly and asked, "See? Why does it have to do that?"

One girl is frustrated because she can't get *CommercialFolio* to do things she expects. For example, she tries to change the font and she does it correctly, but *CommercialFolio* doesn't respond. She has similar problems changing color and centering text. I watch her work for a while, and discovered that what she says is true. It looks to me like she is doing things as she should, and she's not getting the results one would expect. Her specific frustration is that she put all this time and effort into working in *CommercialFolio*, and in the end, has very little to show for it. She has already spent several hours working on her portfolio project.

In her thinkaloud work session, Anne discovered her splash page had been substantially reformatted. In Mallory's work session, she complained that sometimes *CommercialFolio* wouldn't let her center things: "If I center one thing,

the whole thing will be centered. If I try to move one thing, then the whole section will be moved back, so I found that sometimes if you do it in *Word* it'll be better."

November 1: Cathy is frustrated because the spacing in her document has changed from what she intended and what she had just a short time ago. She has her pen pinched between her lips. Another student is having the same problem—and another. Hands are up all over the place in the lab, two and three at a time. Another student says, "I'm afraid I'm going to pull up *CommercialFolio* for my presentation and it's going to look like this and I'm going to look like an idiot in front of all of these people."

A student at the back of the room is talking to Dr. S. She says in a voice shaking with emotion, "Every day it's different. Every day I sign on and it's a different font size." Her arms are crossed and she looks angry. When she puts her hands on her face, I wonder if she's going to cry. The spacing and formatting change again even as she and Dr. S are looking at it. Dr. S reminds the students to backup their work. Cathy announces she wants to call *CommercialFolio* and give them a piece of her mind....Cathy has gotten someone on the phone and explains the problem she and others are having. The tech support person tells her the problem is in pasting from Microsoft *Word* and that they should put their text in *WordPad* before moving it into *CommercialFolio*.

Many of the students create everything in *Word* and then paste into *CommercialFolio*. They're very upset at this news. Cathy tells me she feels so bad for being so negative and a girl across the way says, "I don't think we started out that way."

Later at the late night work session, Maria and Cathy talked about their formatting and spacing problems. They characterized the answer from the tech support line as "crap." Crystal was also there and said she was "not in the mood to mess with *CommercialFolio* messing up." She decided to try the *WordPad* trick even though she didn't think it made any sense. She was willing to do anything to avoid more problems. She tried the *WordPad* workaround and it seemed to work for her.

On my next trip to VendorBuilt, I saw more students trying the trick using *WordPad*. For example, Courtney's reflections misbehaved. After she and Alicia failed to clean those up by editing the HTML source code, she tried the *WordPad* trick with more success. A few days later

in the *CommercialFolio* lab, another student said she had tried the *WordPad* trick without success. As she was trying to show me what had happened, she discovered that it worked after all.

In class, Stephanie decided to try using the *WordPad* trick as she moved her Classroom Management Plan into the template Hannah passed along earlier. (Stephanie's portfolio isn't due for another year or more). She reported that it was going well: "I've been moving it in through *WordPad* and it worked like a charm."

When Dr. S overheard "worked like a charm," she asked what was working. After Stephanie gave her the context, Dr. S observed that the students are "so reluctant to use the *WordPad* to move their stuff from Microsoft *Word* to *CommercialFolio*." Hannah retorted: "We're stubborn and we're stressed out and we don't want to do an extra step!" (Analysis on page 219.)

Tool Affordances at VBC

Students at VendorBuilt College were extremely frustrated with some of the constraints their tools placed on them. However, it is important to note that there were a number of things they liked about the tools they were using and the impact those tools had on their portfolio authoring experience. Let's begin with the cognitive tools.

Students said the matrix of artifacts provided by faculty was very important for communicating the requirements and expectations. Astra spoke of this in the first interview of the semester: "I like having 'Yes, you can use this project because it fits this AP' already set out. It makes things easier to go back into your schooling and say, 'Ok, I know I did this, but what

the heck did I do it on, why, and how does it connect?’ By already having the rubric [she meant matrix] out, it says, ‘Yes, this fits this. Now you get to figure out why.’”

Further, preservice teachers frequently referred to the matrix to know what is required and they used it to track their progress toward meeting those requirements. The matrix of artifacts was a constant presence in the classes and lab sessions. Mallory put it in her binder so she would have it with her at all times. Some students developed session work plans based on the matrix. Others developed coding schemes and derivative matrices to track their progress. Anne called her matrix supplement “this magical thing” and used it “to make sure that I’m going to be working on the accomplished practice that I thought I would be.”

Students also valued the template Dr. S created for students to use in constructing their portfolios. Phoebe used the suggested questions in her reflections because she thought they were good questions. In fact, Phoebe reported “I’ve gone along with pretty much everything on the template” because “it’s easier for me.”

With the exception of Anne and Ashley, most of the preservice teacher portfolio authors appreciated the organization and layout *CommercialFolio* lent their portfolio efforts. Stephanie indicated she feels organized to have everything in one place. Phoebe liked the lefthand navigation and thought it would be easy for reviewers to navigate. Cathy agreed with that assessment of the layout and also appreciated that she could log in to the system multiple times. She, and others, used that capability during the editing process and while reviewing comments from professors and other reviewers.

Students also appreciated the availability of the standards and accomplished practices. Anne found them helpful because she didn’t need to copy and paste them from somewhere else. She viewed this availability “like a shortcut.” Tucker was “really thrilled to have access to the

video library that came with his *CommercialFolio* subscription and several students at VBC used video clips from the library in projects for other classes. Although students were generally displeased with the mid-semester upgrade, Cathy noted one positive outcome—the ability to navigate using breadcrumbs.

In summary, students at VBC had mixed feelings about *CommercialFolio*.

MALLORY: I don't think it's that bad—as bad as everybody makes it out to be. *CommercialFolio*. I think we're just used to everything being easy and technology isn't perfect and it just doesn't have to be. They're still working on it. That's all I'm saying. I think it's decent. It's pretty good.

ASTRA: *CommercialFolio* is useful in some ways, as I mentioned earlier, and in some ways it's sort of [makes funny noises and a face.]. In some ways I like it and in some ways I don't.

The Production/Consumption Paradox

The final section of this chapter turns to the paradox or tensions existing between two sub-systems of the CHAT framework: production and consumption. Production is the dominant force in activity systems. In the activity system of interest, students are producing a portfolio. Students hope there are more to their efforts than a portfolio, i.e. learning and skill development. However, the students talked about consumption as they produced their portfolios. Several students talked about cost when discussing the portfolio experience. Some talked about the monetary cost of the project (equipment, software, subscriptions, or Internet access), but nearly every student mentioned cost in terms of time. In fact, VendorBuilt's DaLynn, Mason State's Gabrielle, and others, called the portfolio authoring process “time consuming.” Without exception, each of the main informants in this study would advise younger students to start the portfolio process early because of the intense time requirements.

MSU's Monica advised others to leave plenty of time to become familiar with the publishing process. Tiffany concurred, suggesting "Get things figured out right away. Don't wait around. Don't procrastinate. Go in and get help. That way you know what to do . . . spend time on it." At VendorBuilt, Rafael cautioned against procrastination as well. He was on campus putting the final touches on his portfolio as he prepared to graduate: "I procrastinated. That's why I'm in here today. I procrastinated." His advice to younger students is to spread the portfolio tasks over time because the process is so much easier if you place artifacts in the portfolio right away. Phoebe was grateful to have a semester-long class to work on her portfolio:

I am glad that we have a semester long class because having certain reflection due has been good. I'm a huge procrastinator and so I would normally have saved 12 reflection pieces for the week before I presented which would have been a problem for me and problematic for the teacher who had to go through them. So, it's good that we have all that time so she can assign those reflections—you know, three this week and three the next. And even now, I'm still behind, but it's nice that I have the time. And time in class is good, too. Even though I said I don't do much of the hard thinking in class, I do make use of that time.

Others talked about the amount of time the portfolio task takes.

ASTRA: It takes time to develop. You really need to start focusing on it as soon as you can because if you don't, you'll be at your senior year and you'll be stuck. You'll be grabbing at information and trying to remember where you put everything. And if it's not in electronic format, you have to type everything up and you have to redo everything, which is what I'm doing now because a lot of my rubrics and a lot of my projects were not done electronically. We had to print them out and I don't know where the disks are. I had them saved, but because it's been so long, I no longer have them.

SARAH: You can spend six hours at one time working on it. And that's insane...the amount of time."

Students also talked about marathon work sessions. Several young ladies spent three five-hour-days in the lab at VendorBuilt. They needed this time to have access to the scanners.

GABRIELLE adds: And when you're doing it, you put so much into that by the time you're done, you're so tired that that's part of the reason you're so glad to get it done—you can sleep.

Rafael emphasized, “You need to understand the time that's involved in it.” He points out that problems crop up and little things add up to a lot of time: time to do the artifact, go match it to an accomplished practice in the words of the accomplished practice, write the reflection, do the revisions. There are 12 artifacts and all of the revising and scanning that go along with each of them. At our interview, he was days away from graduation and spent seven hours the previous trying to scan documents and was on campus for another three when I spoke to him again. His chief complaint at this point was about a disproportionate amount of stuff to be scanned: many pages of evaluations, 12 practica, six observations, 12 rubrics, and a picture on the splash page. He was quick to point out that scanning images also requires resizing them as well.

Several students offered time estimates for their portfolio projects. Anne estimates an average of four hours per week spent on her portfolio. Sarah's estimate was quite a bit higher:

I spent a lot of time. The last two weeks of student teaching, I was working on this from after school –school let out about 2:30 pm—I worked on it from right after school up until nine o'clock or ten o'clock for about two weeks. Every night. And that was also, scanning my students' work, that was getting all of these links posted in every thing, that was—I also decided that I was going to do a paper copy of my portfolio because I knew that people would want to see that at the Teacher Fair, so that was printing all of that off and organizing it and putting it into my binder. So it wasn't all just digital portfolio, it was my portfolio overall. I was working on that for six hours a night, for about two weeks. That's quite a bit of time.

Astra was much more succinct as she talked about time: “Time? I have no time.” Mallory offered an amusing explanation: “The portfolio classes go by really quickly because—I don't know where the time goes, butcomputers suck time out of you.”

In her role as a portfolio assistant at Mason State, Amanda has seen a lot of portfolios and heard many stories about portfolios. She wonders if instructors understand how much time all of this actually takes:

I think the instructors don't know how long it takes. I think they think that since it's all typed out you can just publish it right away. But really, all 10 of those reflections have to be published on 10 individual pages and so that takes a while to bring up and fix the formatting. Like, if you cut and past it from *Word* into Netscape, it changes your bold and italics and stuff like that and they don't realize that....especially with less on plans. Those are the biggest.

Tucker offers a multi-dimensional view of time as it relates to his portfolio:

I think of two things. One—I think of the time that it takes to make the portfolio and, two—I think of the time span that the portfolio encompasses, because I'm putting in artifacts from at least the last three years...anything from when I was a freshman. But it's covering more than just right now, so showing improvement is a big thing. And that's why the reflection statements are so important...to me at least, because it's showing not only "I've done this, but I've learned this because of it and this is how I've improved since then." As far as the time that it takes to make it—it's, for the most part, pretty simple. It takes time, of course, to write reflection statements and things like that.

CHAPTER SIX: ANALYSIS AND INTERPRETATION

In the literature review on electronic portfolios in Chapter 2, researchers and portfolio leaders warned of problems with large-scale implementations of portfolios—particularly in high-stakes environments such as teacher education programs are undertaking to satisfy accreditation demands. In this final chapter, I demonstrate how Engeström’s Cultural Historical Activity Theory (CHAT) provides a coherent framework to synthesize these problems.

The visits to both Mason State University and VendorBuilt College described in Chapter 5 presented several key ideas within CHAT including the networked nature of activity, the portfolio as a boundary crossing activity, contradictions within the portfolio activity, and changes to the portfolio activity system. This chapter explores each of these ideas more carefully. The analysis begins with brief discussions of the activity network and of the portfolio as a boundary activity. It also examines how the portfolio authoring activity expanded as participants introduced changes to the system. The scrutiny focuses on the changes in the activity system and interpretation of the tensions giving impetus to those changes. Several tensions were common to both institutions. Others only appeared at one of the institutions. In addition to the analysis of changes to the activity system, the chapter relates the CHAT analysis to previous literature on portfolios; proposes answers to the research questions posed at the outset of this study; and suggests areas for further research.

The Networked Nature of Portfolio Activity

Recall the grocery list example from Chapter Three. It illustrated a few key ideas about the networked nature of making a grocery list to use for a trip to the local supermarket. The

preservice teachers' portfolio activity systems at both Mason State University and VendorBuilt College are similarly networked in nature. Understanding these networks helps researchers and those responsible for implementing portfolio initiatives realize the interconnectedness of the social relationships surrounding portfolio activity. "Moreover, activity can only be adequately understood within its culturally and historically situated context" (Barab et al., 2004, p. 204). These relationships shape, afford, and constrain how portfolios are used and the experiences of portfolio creators and users. It is through understanding these relationships that we can identify possibilities for change and opportunities for fruitful lines of research. Although the networks at Mason State and VendorBuilt have much in common, they are not identical. The diagram in Figure 29 represents some of the dominant network relationships present at VendorBuilt College and this discussion will be limited to that institution.

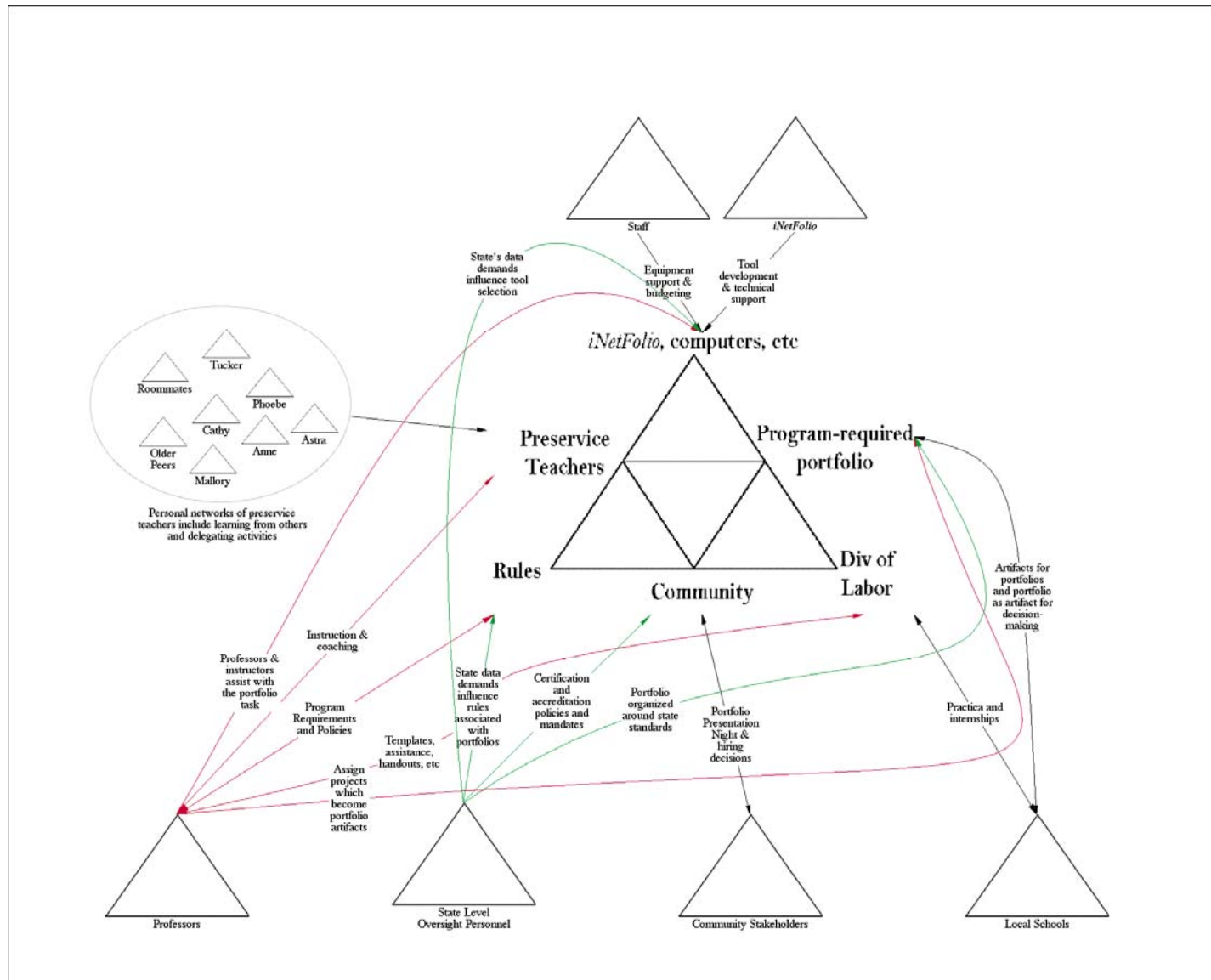


Figure 29. Networked nature of portfolio activity at VendorBuilt College.

Recall that subject-producing activity focuses on recruiting, training, and educating subjects for the activity (Engeström, 1987). At VBC, preservice teachers engaged in individual activities to learn more about creating their portfolio and the tools they were using. They shared technical skills with each other and learned from the experiences of roommates and older peers. Some asked friends, boyfriends, and family members for assistance when needed. Of course, professors and instructors participated in numerous subject-producing activities as they worked with their students in their coaching and mentoring roles. These numerous activity systems are represented in Figure 29 by additional activity triangles with arrows pointing to the Preservice Teachers (Subject) node of the central activity.

Tool-producing activities focus on creating tools used in the central activity (Engeström, 1987). At VendorBuilt College, technical staff provided budget and technical support for the computers, scanners, and network the students used to create their portfolios. *CommercialFolio* provided a free technical support hotline for students having difficulty with their system. The company continues to release upgrades to their service at regular intervals. Data collection and aggregation demands set forth by state personnel influence the types of tools selected for use in the portfolio activity. Professors created tools to help students with their tasks and provided assistance to students when needed. In Figure 29 activity triangles labeled staff, *CommercialFolio*, state level oversight personnel, and professors represent each of these nearby activity systems. They have arrows pointing to the Tools node of the central activity to represent the relationship to the central activity.

Rule-producing activities focus on creating rules, policies, and/or legislation that effects or governs the central activity (Engeström, 1987). At VendorBuilt College, this is evident in certification and accreditation policies and mandates from the state as well as program

requirements and policies deemed appropriate by professors and education department leaders.

An arrow from state level oversight personnel to the Rules node represents that influence. Notice that the arrow between the Rules and Professors nodes is double-headed to reflect the impact students have on the rules, norms, and conventions of the activity. Their feedback gradually changes the policies governing their activities.

The activities of local schools affect the preservice teachers' portfolio activity in a variety of ways. Students visit the schools to complete their required practica and internship. The double-headed arrow between Division of Labor node and the activity system of the local schools reflects the schools' participation in the preservice teacher's activity and the preservice teacher's contribution to the schools through practica and internship experiences. In a similar fashion, there is a double-headed arrow between the Program-Required Portfolio and the local schools. This double-headed arrow represents that artifacts from school-based activities are presented in the preservice teachers' portfolio to document involvement in and experience with the schools. In the reverse direction, school leaders can review the artifacts and experiences documented in the preservice teachers' portfolios as part of their decision-making process regarding hiring and internships.

At VendorBuilt, community stakeholders are actively involved in the preservice teacher's portfolio activity when they visit the campus to participate in Portfolio Presentation Night and to advise Education Department leaders. This is represented by a double-headed arrow indicating that promising teacher candidates may receive personal invitations or leads to apply for job openings in the community as a result of Portfolio Presentation Night.

State level oversight personnel are influential members of the portfolio activity community at VendorBuilt. An arrow connects the activity system of the state level oversight

personnel to the portfolio authoring community at VendorBuilt. The portfolio itself is organized around the state standards and an arrow connects the state personnel activity to the portfolio object to represent this. Furthermore, the state rules and policies influence the institution's rules and policies and Figure 29 includes an arrow indicating that relationship. In addition, the state demands for data collection and aggregation influence the Tools selected at the institution.

The activity systems of the education professors and instructors are closely tied to the preservice teachers' portfolio activity. In fact, the influence of professors and instructors influence permeates the portfolio activity. Professors' instruction and coaching of preservice teachers is clearly a subject-producing activity. Their influence on rules, norms, and conventions is unmistakable. In addition, professors and instructors divide some of the labor associated with the portfolio task by developing and sharing templates and handouts with students. Professors often serve in a tool capacity as they assist their students with portfolio tasks. Finally, the assignments and projects professors and instructors assign in their classes are elements of the preservice teachers' portfolios (Object) and are classified as object-producing activities.

The network in Figure 29 represents the relationships between and among stakeholders in VendorBuilt's portfolio authoring activity system. In it, one can see several of the issues raised in the portfolio literature reviewed in Chapters 1 and 2.

The Portfolio as a Boundary Crossing Activity

"A university or comprehensive secondary school (as the very names imply) brings together a wide range of other activity systems with vastly different and often contradictory object/motives, because it exists to select and (perhaps) prepare students for a wide range of

further involvements with them” (Russell, 1997, p. 14). At both Mason State University and VendorBuilt College, the portfolio is key to crossing several of the boundaries between the various activity systems on the way to graduating from the institution and becoming a licensed teacher. The boundary crossing nature of the portfolio activity drives many of the tensions within the system. Because of its boundary crossing nature, the portfolio activity has the power to shape the preservice teacher’s experience and even the program in which the portfolio activity takes place. If not for their boundary crossing nature, many of the problems and tensions associated with contemporary portfolio efforts would disappear.

At VendorBuilt, students’ portfolios are assessed before the preservice teacher is permitted to enter student teaching and again before graduation. In addition, students must document passing scores on the Florida Teacher Certification Exam in their portfolios and include documentation from practica and internships.

At Mason State, preservice teachers’ portfolio are evaluated at the end of four different phases to determine whether the student may move to the next phase—300 and 400 level classes, admission to student teaching, and recommendation for initial licensure. Faculty members recommend preservice teachers include work from their practica and internships in their portfolios. The Midwestern state where Mason State is located requires portfolios for ongoing teacher licensure. Figure 30 illustrates some of the boundary activities embedded within the portfolio activity at Mason State. The state requirement for a portfolio to maintain certification is represented by the loop between portfolio and continuing licensure.

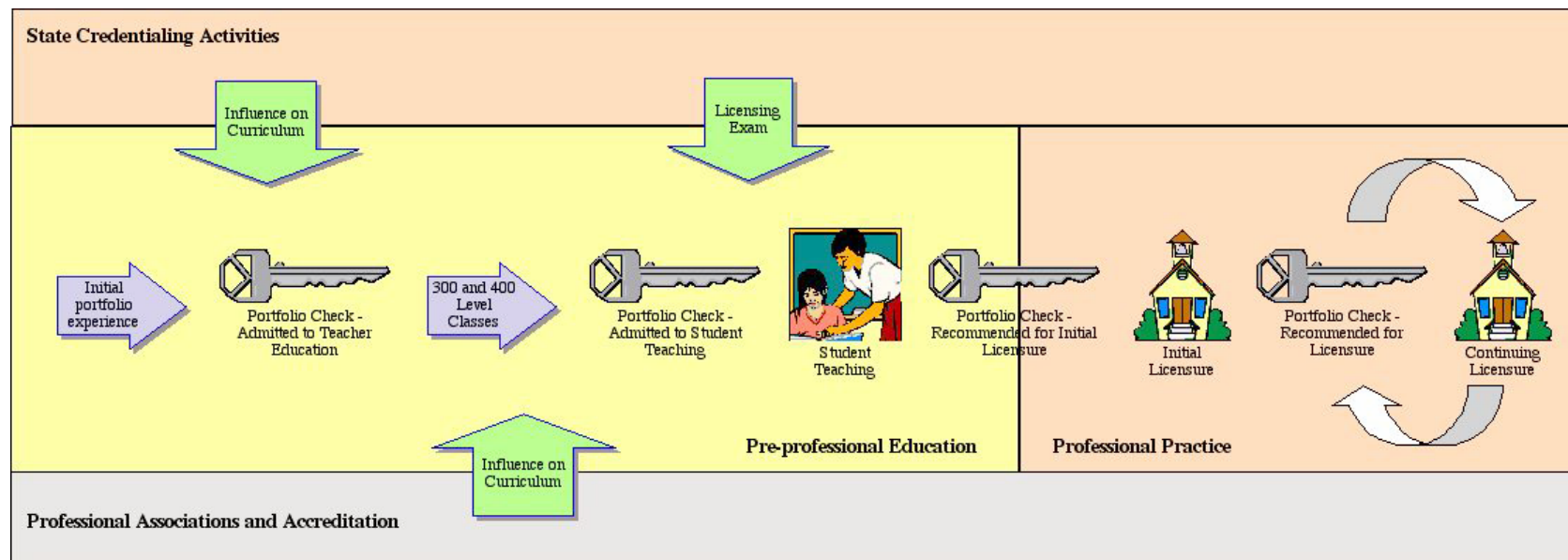


Figure 30. Digital portfolios as a boundary crossing activity for students at Mason State University.

Analyzing the Tensions Within the Portfolio Activity Systems

In this study, CHAT was used to analyze the portfolio activity at two different institutions. The tensions inevitable in any activity system are the impetus for change (Engeström, 1987) and understanding those tensions enhances understanding of the problems raised in earlier work on portfolios. A detailed analysis and understanding of the tensions within the portfolio activity system offers teacher educators guidance to intervene in the portfolio activity in order to improve the educational experience and outcomes for preservice teachers. CHAT can be used for interventions such as these (Engeström, 1999).

Primary Tensions

Recall that a primary tension refers to a tension that is within individual nodes of the activity system. Both institutions had primary tensions in their respective activity systems. Some of those tensions were similar across institutions.

Tension Within the Tools Node

One of the primary tensions present at both institutions was within the Tools node. Preservice teachers at both institutions used Microsoft *Word* for large portions of their class work. *Word* is a familiar tool, well-suited for generating text-based documents. Most students expected that copying and pasting *Word*-generated documents to their portfolios would work flawlessly. They were mistaken. Microsoft *Word* caused formatting problems with various tools including *CommercialFolio*, *Dreamweaver*, and *Composer*. The tension was between Microsoft

Word and non-Microsoft products. The visible evidence for this tension manifested as a formatting problem within the portfolios. At Mason State, some portfolio pages included “funky symbols” and unusual spacing (see page 179). At VendorBuilt, inconsistent spacing was the evidence (see page 202).

At VendorBuilt, this primary tension was the impetus for the workaround solution involving *Word Pad* (described on p. 202) recommended by *CommercialFolio* technical support staff. Even when armed with the information that their *Word* files were causing the formatting issues they faced, most VendorBuilt students ignored the workaround solution and persisted in their less-than-optimal copy and paste approaches. As they did so, they became increasingly frustrated. Many decided to leave the incorrectly formatted text in their portfolios rather than try the vendor-recommended approach.¹² For the most part, students seemed to resist this innovation because it was too time-consuming.

At Mason State, the problem was less prevalent because portfolio support staff cautioned students about the problem in advance. Those students who were impacted by the conflict between tools typically used manual editing to remove the problems.

Tension Within the Rules Node

Although the portfolio literature speaks of the collaborative nature of portfolio authorship (Paulson & Paulson, 1990; Shulman, 1998), at least one student at each institution showed some

¹² On March 5, 2006, *CommercialFolio* service announced a new feature called “Paste as Plain Text Tool” to simplify the process for removing third party formatting. This new feature negates the need for the *Word Pad* workaround suggested by *CommercialFolio* technical support staff.

uncertainty about the legitimacy of working together. (See page 140.) Remember that Amanda used the word “stealing” when she retrieved some HTML code one of her classmates had specifically posted so others could learn from it. (See page 138.) It was likely a figure of speech, but she could have chosen any number of other verbs to describe her actions, including borrowing, examining, looking, learning, or finding out, among others.

Students at both institutions seem to understand that collaboration is an important part of the portfolio authoring task. Yet, they seem uncomfortable about where the line separating collaboration from cheating is drawn. This tension is between the convention permitting collaboration on portfolio tasks and another academic convention that forbids collaboration on other tasks (such as group work on most examinations). At VendorBuilt College, it was an open secret that students shared their portfolios with others. (See page 142.) There appeared to be less sharing at Mason State. There was certainly less discussion about sharing.

Another Tension Within the Rules Node

In one external program at Mason State, there appears to be another primary tension within the Rules node. (See page 159 and page 171.) This tension exists between “rules as published” and “rules as enforced.” During the summer Adam and Chris visited the Digital Portfolio Support Lab and asked for help to make their portfolios look “more professional.” Interactions with these two young men prompted Michael, one of MSU’s main portfolio assistants, to decide it was time to “up the expectations around here.” His subsequent interactions with Laura and Bob (see page 172) may be the beginning of a tertiary tension (between one

system and a more advanced system) in which the normal expectation of preservice teacher portfolios becomes more advanced than the current expectation.

Tension Within the Division of Labor Node

But how much help is too much? Students face this dilemma as they try to balance their need to get this sometimes overwhelming portfolio task finished with the need to master new skills and maintain academic integrity. This primary tension in the Division of Labor node is evident at Mason State. The conflict is between portfolio authorship as an independent activity and portfolio authorship as a shared activity. Several students talked about getting “too much help”; they appreciated it as they received the help, but had to face the consequences of accepting too much help later. Recall Adah’s problem in her thinkaloud work session as an example. (See page 153.)

Tension Within the Tools Node: CommercialFolio

At VendorBuilt, *CommercialFolio* provided the tools to create tables. Tucker believed the upgrade to *CommercialFolio* allowed him to copy the table from his *Word* document and paste it into the *CommercialFolio* tool. When he tried that, he did not like the result and decided to upload the file as an image. The *CommercialFolio* tables were unstable and most students who tried to use them abandoned their efforts in favor of using a screen capture technique. This primary tension places expectations for a table-making function in tension with the actual performance of the table-making function.

Secondary Tensions at VBC

A secondary tension is between different nodes in the same activity system. At VBC, there was evidence of such tensions between the Requirements node and the Tools node, as well as between the Requirements node and the Subjects node.

Tension Between Rules and Tools Nodes: Rubrics and *CommercialFolio*

Students at VBC were required to include a copy of their graded rubric for each artifact. For paper rubrics, students typically scanned the professor's graded rubric and included it as an image or an attachment. Including rubrics that had previously been completed in *CommercialFolio* proved more difficult because *CommercialFolio* prohibited this practice. Students were required to include a copy of the rubric stored in *CommercialFolio*, but the *CommercialFolio* tool didn't allow that inclusion. Thus, there is a tension between the Requirements and Tools nodes. As a result of this tension, Alicia developed the workaround allowing her to copy and paste HTML source in order to include the rubric her professors required of her. (See page 192.) When that turned out to be unreliable, she and others turned to another approach that used photo-editing software and screen captures.

Tension Between Subjects and Requirements Node

In her work session, Cathy shared the following:

Before, when I heard the word portfolio, I thought more of making it a creative process and showing the creative process—like students' writing work. Something like that is what I associated with portfolio. And now, I associate it with this kind of drudging requirement and so I feel like all of the creativity has really been sucked out of the whole thing. So we're not really being creative. We're all

turning in something that looks almost exactly the same and ... there's really not a whole lot of room for a whole lot of creativity.

Cathy is speaking of a tension that might be classified as a secondary tension or a quaternary tension. One possible interpretation is that Cathy surfaced evidence of a quaternary tension—a conflict between this activity and a nearby activity. Cathy's current portfolio activity is rule-bound: the portfolio must include eight specific artifacts; her reflections must include specific language from the standards; the portfolio must be organized according to the accomplished practices; and she must use the *CommercialFolio* tool. This rule-bound activity is in conflict with a less restrictive portfolio activity such as a showcase portfolio, learning portfolio, or writing portfolio. Cathy specifically cited an example of a more creative portfolio leading one to speculate whether she has authored a creative portfolio. Analyzing this as a quaternary tension is credible, but I believe another interpretation is perhaps more credible.

An alternative interpretation is that Cathy articulated evidence of a secondary tension. In this interpretation, the conflict is between the Requirements node and Subject node in the activity. The Requirements node is part of the secondary tension in that it lays out the various requirements driving the portfolio activity at VendorBuilt. In addition, the Subject node is involved because Cathy views herself as a student-centered, highly creative teacher. The notion of a prescriptive, rule-driven portfolio is in conflict with Cathy's beliefs about herself and teaching. Because Cathy and other students speak extensively about the high value they place on exercising creativity in other classes and the projects they value most, I think their beliefs are held more deeply than just the portfolio activity. Therefore, I believe the interpretation placing this contradiction as secondary is stronger than the interpretation classifying it as quaternary.

Tertiary Tensions

Recall from Chapter 3 that a tertiary tension is one that exists between the central activity system of interest and a more advanced form of that same activity system.

Institutions in Transition

The larger tertiary tension at each institution requires a broader view than that of students creating electronic portfolios. It did not appear in the portfolio activity, but rather as students described their activity. Throughout the discussions with students at each institution - especially senior students—they said they were “in transition.”¹³ By this, I believe they meant that the larger teacher program where their activity was nested was “in transition”. Students were in the middle of shifting requirements and the inevitable problems associated with implementing a new program and new changes.

¹³ Students at both institutions spoke about being “in transition” in nearly every conversation. This theme serves as the title for the study because of its pervasiveness and its appropriateness. Although students generally used the phrase “we’re in transition” to speak about changing requirements or institutions under change, they occasionally mentioned other transitions they noticed such as the need for schools to change to meet new demands and their own transitions from students to teachers. For some, students were transitioning from dependence on their parents to the independence of their first “real” job. For others, their transition was from one career to the next. For all students, their portfolio was a requirement to make the next transition or to cross the boundary to the next phase of their preparation.

At Mason State, this idea first manifested in one of the earliest interviews when Sarah and the younger Gabrielle discussed their experiences. Remember that Sarah was in her last semester of coursework and was a member of the first cohort of students required to create digital portfolios. Gabrielle was a sophomore. Several of their interactions went as follows: Sarah would describe a problem or challenge that she had with her portfolio and her program and Gabrielle would relate a very different experience. Their conclusion was that the portfolio leaders had fixed many of the problems Sarah experienced. Sarah was sanguine, indicating that she was pleased the younger students would benefit from what she and her peers “went through.” In her first interview, she was careful to point out that she recognizes the challenges of implementing changes in education:

I understand. I’ve been in schools and I know that to make changes in education—it’s like trying to change a flat on the car without ever stopping. You know you still have students coming in in August and you still have to keep that ball rolling and the changes are going to be made over time, just like it’s taken four years for this problem to be fixed. Eventually, they’re going to benefit from the struggles that we went through.

As clear as the “in transition” theme appeared at Mason State, it was even more pronounced at VendorBuilt where many of the students began their program with the belief they were to create paper portfolios and later learned they were to compile electronic portfolios. Anne talked about needing a bridge she did not find:

Because we’re still in transition from paper to computer—there was a bridge we didn’t find. I think we had to jump that river and I think a little bit more support should have been offered to those students who came in the first year it was introduced and all of a sudden now, 2 1/2 years later, we have no clue about certain things.

Cathy also pointed out the changes in the program:

I think, unfortunately for us, we were in the transition period. During our sophomore year, it was then they decided everybody had to do electronic

portfolios. That's when it was really finalized that was what was going to happen. I think a lot of the students that are younger than us—like the kids who were freshmen and sophomores now are getting the benefits of some of the things we wish we would have had. ...But I think that a lot of the things that we have trouble with are because of the time we were at. We were at the transition and we didn't start out this way.

Moving From Paper to Electronic

Both institutions had evidence of a tertiary tension associated with the move from paper portfolios to electronic portfolios.

MSU Not Fully Transitioned

At Mason State, the system was not fully transitioned. Students created their digital portfolio in their first education class and maintained it through student teaching. Recall that in their *Reflection* class after student teaching, instructors require them to create a paper-based portfolio to represent their student teaching. Once that is completed, pre-service teachers then cannibalize the student teaching portfolio to create an interview portfolio. Students are aware that they will move from digital to paper and many consider work on the digital portfolio “useless” or “a waste of time.” In most cases, it appears the digital portfolio is archived, never to be used again. Occasionally, it is completely abandoned. This tertiary tension exists between a paper-based portfolio system and the digital portfolio system.

VBC Not Fully Transitioned

At VendorBuilt College, the same tertiary conflict between paper and electronic portfolio exists, albeit in different form. Unlike students at Mason State, VendorBuilt students are required to use their electronic portfolios through graduation. They face considerable demands on their time because some aspects of VendorBuilt's system have not moved to electronic. Students shoulder the burden of converting paper documents such as paper rubrics, practica forms, and internship evaluations to digital forms as Rafael explained on page 209.

Paper and Electronic Requirements at VBC

The tertiary conflict between paper and electronic formats is evident in classroom requirements, too. Typically, this tension resulted in extra work as students created paper-based projects for the professors assigning the original projects and then electronic reproductions to include in their portfolio. At least one professor required students in her classes to submit both paper and electronic copies of class projects. She required the paper copy for her grading and provided a *CommercialFolio* template for students to move their projects into *CommercialFolio*. Tucker explains:

It would be nice if all the professors—and I know some of them are trying to do this which is nice—but if all the professors would have us do at least those artifacts that are required for the portfolio—if we did those in *CommercialFolio* to begin with and turned them in through *CommercialFolio* and got a rubric back through *CommercialFolio*, that we could easily put into our portfolio. That would be a lot nicer than having to go back to the project that we did and then try to put it in and try to find the best way to put it in, because a lot of times just uploading a *Word* document for 57-page *Word* document isn't going to work.

Anne elaborates:

I just don't think there's a generalized acceptance of *CommercialFolio*. Even though we're using it for our portfolios in the end, I don't think a lot of teachers have enough knowledge about *CommercialFolio* in our department. So as a culmination point, we have classes that don't use *CommercialFolio* and we're supposed to scan every single one of our pages into this accomplished practice as our artifact and then there are other teachers who are so knowledgeable . . .

This tension between requirements to have the same artifact in both paper and electronic forms was most likely the impetus for the broad student acceptance of Angela's Classroom Management Plan Template described on page 183.

Images at VBC

The tension associated with how *CommercialFolio* handles images might arguably be categorized as quaternary tensions. However, given the system is apparently capable of more advanced image handling than commonly believed led me to place it as a tertiary tension between an existing system (as the users and technical support staff understand it) and a more advanced version of the same system (as it apparently will function).

Both Anne (described page 198) and Alicia (described page 200) found a way to display multiple images. Alicia confided she was nervous her "extra" images might all disappear without warning. Anne had similar concerns about the approach (described page 198) she used as well: "Now, I'm a little worried that *CommercialFolio* will come back and say, 'I'm sorry. Your portfolio crashed because you kept using all of these codes and we can't hold that much memory.'"

In addition, students complained about other limitations of *CommercialFolio's* image capabilities as they understood them and *CommercialFolio* staff discussed them: inability to

resize images once placed in a *CommercialFolio* document and restricted placement of those images. It seems Alicia's newly discovered dialog box (described page 201) and workaround rectifies each of those identified problems.

Quaternary Tensions Common to Both Institutions

A quaternary tension is one between two nearby activity systems. At both Mason State University and VendorBuilt College, preservice teachers identified tension between their digital portfolio activity and the K-12 schools that would ultimately employ them. Students at both institutions believed their digital portfolios would not be helpful in the interview process. In nearly every instance, preservice teachers told of how a trusted and credible acquaintance had spoken to them about the value—or lack of value—of their digital portfolios. Several shared concerns about hiring committees not having time to look at their portfolios and worries that there would not be Internet access in interview rooms. They also worried that prospective employers would not be interested in reviewing their program-required portfolios. This problem with conflicting purposes is well-documented in the literature (Carney, 2001; Snyder et al., 1998b).

Another quaternary tension was between the institutions and their accrediting bodies. Recall the discussion in *The Broader Context* section of the previous chapter that both Anne and Sarah recognized they were creating electronic portfolios because it was required of their respective institutions by an external agency. At VendorBuilt, many of faculty members' decisions regarding their portfolio implementation were driven by the state's demands rather

than their own teaching philosophies. Paulson and Paulson (1991) called these external influences “ghostwriters in the sky” (p. 4).

Other Themes and Tensions

In addition to the tensions already identified, three themes emerged that presented special challenges in analysis: reflection, creativity, and overemphasis of the portfolio. This section presents the tensions contributing to the students’ discussions of those themes, but future study more focused on one or more of these themes will be required to clarify them further.

Reflection

Students at both institutions talked about *reflection* in our conversations. Sometimes they spoke about the portfolio as being valuable for reflection. These comments tended to focus on the verb “reflect.”

MSU’s MONICA: When I start teaching, I want to make sure I constantly reflect on my teaching, like “wow, this is never what I thought it would be” or “wow, I’m kind of getting to that area where I never wanted to be that teacher. I’m slipping into that.” That way, I can look at this and say, “You know, this is what you wanted to start out as. You know, you need to keep doing that” or “You know, you’ve lost your passion.” At least I can look back on it and have kind of the proof that, you know, “this is where I stand and this is where I still do stand.”

MSU’s DAVID: . . . you can go back and, you know, if you’re really stumped or blocked in your teaching career, you can always go back and say, “Oh, now I remember” and maybe that’ll get you through or help you remember . . .

VBC’s CATHY: I feel like it was valuable in that—when I was standing there presenting it, I was like, “I know *all* of this stuff, like I *did* all this work” and so I think it’s valuable in reflecting upon what you did, because we’ve done *all* of these projects and you see the extent of the portfolio and you think, “I *did* all of this” and I think that, had I not had to put it in a portfolio, I would have done the

project, forgotten about it, and maybe down the road thought, “I did a project on this in college. What did I do?” when you’re teaching, but I guess it requires you to be a little more personally reflective on what you’ve done.

In contrast, students tended to see less value in writing reflections. Often, requirements (explicit or perceived) challenged students. MSU’s Adah explains her struggle with a perceived requirement:

I really struggled with the INTASC reflections. They are still not complete because, like I said before, I want this to be useful and I want it to be something I care about. Most people are just like “what possible malarkey can I come up with?” and put it down there. I don’t want to do that, but it’s kind of difficult to get good content. . . .

I know when I look at what everybody else says—beginning students—they’re the same level as I am—they’re the same level I am and they have pages. When she [professor] showed examples, that was the understood length and I didn’t understand that because either it’s only going to get longer and nobody’s going to want to read it even if it is good, or you’re just going to have to completely erase what you do? So, I would much rather start out with a quantity of information that would be parallel to the quality of it in my head. Like, I’m not going to pretend to be an expert in teaching when I’m just a second-year student, so I would really like for a few sentences to suffice in that case.

At VBC, the specificity of the requirements for the written reflections inhibited most students.

MALLORY: I don’t know what I did but the reflections are a little hard at times because I feel like I’m really making stuff up and I feel like they’re going to know that it’s just a bunch of [pauses] just fluff. Yeah. And sometimes choosing, we have to choose three preservice indicators and some of the artifacts that are stretches for their sections, I have conflict about which ones to choose. There’s always one that says “develops professional and personal goals regarding . . .” assessment or communication and I usually choose those if I don’t know what else and say “I really want to improve myself in . . .” these things.

CATHY: There has to be at least two or three [key indicators] in every reflection. It’s usually kind of hard to come up with the sample key indicators because they’re not always really clear. They say they’re preservice and pre-professional indicators, but really most of them seem like they should be professional because a lot of them, like “participates in and supports the overall school improvement process”—obviously we’re not really getting a chance to do that through writing a paper. Like, “supports other school personnel.” Obviously, I don’t—I’m not even

school personnel myself, so how could I support other school personnel? So, a lot of them, I think some of the preservice indicators are a definite stretch. . . . So you see, it's kind of obvious where it's kind of stretching, so you just kind of say what the preservice indicators need you to say as part of your reflection which I don't always want to do that. . . . I feel they might not have been the most genuine reflections about how I felt about writing the paper or doing a project just because it has to adhere to the preservice indicators so that's kind of superficial on that end.

Several other students at VBC: "It's just a bunch of BS."

Student reflections appeared to have several levels of tensions. Students believed the act of reflecting on their work or their practice was a valuable learning experience. They spoke of the value of doing this to learn and also of keeping their portfolios to use in the future. However, the act of reflecting to learn that was part of their personal activity system was perceived to be quite different from the reflective act required in the portfolio activity. At Mason State, Adah appeared to be highly reflective in her thinking, but was reluctant to put her thoughts in writing to meet a requirement to produce a written reflection of a certain length. At VendorBuilt, students had difficulty conforming their written reflections to phrases from the language of the Accomplished Practices. These external requirements seemed in tension with the internal reflection the requirements were intended to foster. This is an example of a primary tension within the Rules node of the activity system.

However, there was also evidence of secondary tension regarding reflection. The secondary tension was between the requirement to reflect and the artifact that was the object upon which preservice teachers had to reflect. This was present at both institutions, but more obviously present at VendorBuilt where students were required to reflect on artifacts that were not substantial enough to warrant significant reflection or viewed as unrelated to the specified standard. Finally, the portfolio activity system showed some evidence of quaternary tension between the requirement of the accrediting body to offer reflections in line with specific teaching

standards and the student's personal reflection which was sometimes focused on other aspects of learning and experience. Analysis of the Reflection theme does not resolve to only one tension.

Creativity

The pre-service teachers at Mason State University and VendorBuilt College prized *creativity*. They spoke of it often in one form or another. Students at Mason State valued the freedom they had in selecting artifacts to include in their portfolios and to choose colors and images to convey their personality in their projects. They repeatedly said they could be as creative as they wanted and spoke of the choices they made for their portfolios. Although they talked about the challenges they faced in learning their tools, students recognized an almost limitless set of possibilities for their work, although none had all the skills or time to do everything they wanted. Even the most skilled among them wanted even more skill to represent themselves and their work in other ways. At Mason State, there was little tension associated with creativity beyond students' desires for more skill. That desire is an example of a primary tension within the Subject node.

In contrast, students at VendorBuilt talked about their frustration that they could not be as creative as they liked. Their frustration seemed to stem from two primary sources. The first was the constraints imposed by the *CommercialFolio* tools: limited color schemes; few layout options; and constraints for using and placing images. Cathy felt the use of technology hindered the creative aspect because showing pictures and writing reflections did not capture the richness of "some amazingly creative projects that people have done in my classes." Several students at VendorBuilt commented that some of their best work was not represented well by the technology

tools available with *CommercialFolio*. This secondary tension between the Tools node (*CommercialFolio* limitations) and the Subject node (students with a self-image as a creative professional) contributed to dissatisfaction with the creativity available in the portfolio activity.

The second source of frustration regarding creativity concerned the requirements governing the portfolio activity. These included the required artifacts and format for student reflections. This secondary tension is between the Subjects node and the Requirements node. Several students remarked that all of the portfolios looked the same—the same colors, the same content. This statement captures both secondary tensions aforementioned. As the reader, review Multimedia 15 or Appendix J to see if you concur with the students' summary.

The most technically skilled students took satisfaction that they were able to circumvent some of the barriers imposed by the tool. Others, like Mallory, acknowledged the constraints of her program's requirements and the tool, but satisfied creative urges by working on visual appeal with color and pictures. Mallory, and others, also added extra artifacts they considered important, but weren't required as a way to display their most meaningful work.

Overemphasis of the Portfolio at VendorBuilt College

At VendorBuilt College, students sometimes talked about the portfolio being *overemphasized*.

I think that it's a good idea to have everything we've done in the portfolio to show, but I think the emphasis that they place on it is on the portfolio itself. It's almost like "Look here! We can make a portfolio," rather than just making it to show our work. It's almost like the work that's the work we're going to show is how well we can make a portfolio. It's not the means to an end—it's the end. I don't know. It's almost kind of like "What do they care more about—the fact that we can write a lesson plan and the behavior management plan or the fact that we can attach it and add a pretty picture and reflect on it?"

We're not learning anything new right here. We're just trying to put up everything to our portfolio and then present it to someone and say, "here's my artifact." Then, we're going to end up talking to them anyway and summarize it in our own words. All this is right now is a big project. I think a lot of people are looking at it this way. It's a big project that has to be completed in a certain amount of time and it's stressful.

I think that they stress too much emphasis on the portfolio in that you must have these certain things in the portfolio and if you don't—I don't know what they're going to do. They are so obsessed—maybe that's not the best word—but you have to have these certain things in there....we have to put a certain artifact in there and if you don't have one they say "Put your paper in there" and they're like "Just get your portfolio done. You have 12 artifacts in there and you're good to go." There's that number 12. I feel like it would be better for me to not put the full number in because it's just filling up my portfolio . . . I feel that it's just filling it up just to fill it out for no reason.

Analyzing the tensions behind these statements is difficult. My interpretation of these comments is that the various tensions in the portfolio activity system at VendorBuilt, coupled with the high-stakes nature of the portfolio, forced students to simultaneously concentrate their energy and attention on the prescriptive requirements and the tool limitations and constraints so that they had little opportunity to focus on the content of the portfolio itself.

The time demands associated with the requirements at VendorBuilt are extreme: tracking progress toward meeting requirements; locating missing artifacts; scanning evaluations, forms, and any other paper documents; writing (and often re-writing) reflections in the prescribed format; and locating images. These demands, coupled with the tool limitations and constraints of slow system performance, temperamental system behavior, and search for workarounds put students firmly in a double-bind as they spent hours compiling their work into their program-required portfolio. Unfortunately, they believed that portfolio would never be used for any other purpose than to satisfy their graduation requirements. Several of them summarized, "It's just busy work."

Summary of the Differences Between the Two Systems

The two main differences between the activity systems at Mason State and VendorBuilt were striking. First, Mason State's system was remarkably fluid in contrast to the system at VendorBuilt College. Second, Mason State's students were scarcely aware of the underlying assessment system in place at their institution. Students knew they had to complete their portfolios and that those portfolios were assessed at various stages. The portfolios took a lot of time to complete, but most students seemed confident their efforts would be satisfactory. In contrast, students at VendorBuilt were keenly aware of the *CommercialFolio* tool and were constantly aware of their need to "pass" the portfolio to move on. The tool was a frequent source of frustration, but they also worried constantly about writing and re-writing their reflections and about finding their required artifacts.

Answering the Research Questions From This Study

The focusing question for this research was "What are the pre-service teachers' experiences using tools to create an electronic portfolio?" Of particular interest was, "In what ways do the tools afford or constrain the tasks associated with electronic portfolio authoring?" Chapter Five provided details from interviews, observations, and work sessions to answer these questions. The details were organized around the CHAT framework with special attention to the comparison and contrast of the student experiences at both institutions. Where possible, the students own words were preserved to present the data to the reader.

In Chapter Six, the data was analyzed through the lens of the CHAT framework. The analysis revealed the networked nature of the portfolio activity and the boundary-crossing

characteristics of the portfolio work. The CHAT framework helped identify and understand the tensions in the respective activity systems. The presence of tension at all four levels was revealed and the analysis highlighted the involvement of the rules, norms, and conventions nodes in many of those tensions.

To what extent do pre-service teachers value the usefulness of their experience creating an electronic portfolio?

Many pre-service teachers tended to talk about the usefulness—or uselessness—of the portfolio, rather than the usefulness of the experience. At Mason State, David and Gabrielle spoke of how much they learned from the entire experience. Monica called her portfolio “an amazing thing to have” and looked forward to using it when she started teaching as a way to let students and parents know her better. She was already planning ways for her students to participate in her portfolio if the school technology capabilities would support that. Adah looked forward to blending her artist portfolio with her teaching portfolio. She spoke often about having the flexibility to bring this important dimension of her life into her teaching portfolio. However, not all students were as enthusiastic. Over the summer, a couple of students expressed doubts about the value the institution placed on their portfolio. They cited the fact that they would lose their university-hosted web space as evidence that their efforts were not valued.

At VendorBuilt, student response was ambiguous as well. Like their counterparts at Mason State, VBC students spoke extensively about the usefulness (or not) of their portfolios and less about the experience. They were particularly concerned that the portfolio they worked so hard to create would run out with their *CommercialFolio* subscriptions. None planned to renew, although several mentioned that they would reconsider if the portfolio turned out to be useful in the interview process and start of their teaching career. Phoebe is an example of

someone open to renewing her account: “My *CommercialFolio* subscription runs out two years after graduation, but I don’t know if I would renew it, but I don’t know that I wouldn’t. I don’t know how well it’s going to be used.”

The data reflects some enthusiasm for the overall experience. Cathy shares:

I feel like it was valuable in that—when I was standing there presenting it, I was like, “I know *all* of this stuff, like I *did* all this work” and so I think it’s valuable in reflecting upon what you did, because we’ve done *all* of these projects and you see the extent of the portfolio and you think, “I *did* all of this” and I think that, had I not had to put it in a portfolio, I would have done the project, forgotten about it, and maybe down the road thought, “I did a project on this in college. What did I do?” when you’re teaching, but I guess it requires us to be a little more personally reflective on what you’ve done.

Astra believes her portfolio experience has prepared her for her teaching career:

In a way it’s valuable because each of us had a different experience with *CommercialFolio*. Our teaching careers are just going to be the same way. We’re going to have different problems or different technical issues or different types of miscommunication between our bosses or something where we’re not going to know something until the last minute and we’re going to have to rush to get it done. And I think trying to do *CommercialFolio* as quickly as we did is a valuable tool for us because we can remember, “Oh yeah, I can do that because I was able to do my portfolio in this certain amount of weeks and I didn’t have my information until maybe the last few days or maybe the last day and I was busy getting everything done. I can do it. It is possible and it looks good when I do it.”

Others were less charitable and talked about the portfolio being overemphasized.

To what extent do preservice teachers believe they will use the skills acquired as a result of the electronic portfolio development process when they enter the teaching field?

Some of the students at Mason State spoke about their plans to use their skills in their teaching. For example, Sarah matter-of-factly mentioned having a class website during her student teaching. Amanda specifically talked about using the skills for her classroom website during student teaching and using her laptop in the classroom to model technology use. Although Monica hadn’t yet started student teaching, she spoke of her desire to use her skills in the

classroom and was hopeful the school where she worked could provide her with an appropriate computer and web space. Adah was looking forward to developing her skills as she progressed in the program—particularly in the area of web design.

The difference in attitude at VendorBuilt is striking. One day in the lab, a student specifically pointed out, “I didn’t really feel like I grew technologically because I feel like I knew how to do all the stuff that it involved.” Others in the room with her agreed.

How do preservice teachers describe the dilemmas explicated by Carney (2001), if at all?

Multiple-purpose dilemma. One of the dilemmas Carney identified in her work is the multiple-purpose dilemma. Students at both institutions faced this dilemma. Students overwhelmingly spoke of building a portfolio because it was required. Only Amanda’s portfolio was optional, but she chose to do it because of the work she put forth in the portfolio support lab. Both art education majors would have done portfolios without having the requirement placed on them. However, their portfolios would probably have been quite different. Aside from meeting requirements, the most frequently mentioned use for students’ portfolio was to look for jobs, but most were highly skeptical of the usefulness of the portfolio for job seeking—particularly as defined by the college or department.

Several students talked about the value of using a portfolio for reflection and seemed to place value in maintaining an archive of their portfolio to remind them of their core beliefs and reasons for teaching. Although not fully supported by the data, I saw some hints that students with a better understanding of portfolio theory seemed more likely to consider portfolio development as a means for reflection a useful outcome.

Self-expression dilemma. The next dilemma Carney discussed in her work is the self-expression dilemma. At both Mason State and VendorBuilt, students spoke extensively about “creativity” and how they valued their opportunities to exercise their creativity. As they elaborated on the theme of creativity, they typically spoke about color and pictures. Mason State’s Carol was bored one night and decided to change all the colors on her portfolio to the bright ones seen in the Objects section. Gabrielle spent countless hours looking for green backgrounds to use in her digital portfolio. She says she did this because “I’m a very ‘out there’ person and I can show myself a lot more. Paper you’re really just black-and white. With paper, you don’t get to show yourself at all.” Monica valued the creative aspect, too: “By putting it on there, it’s made me really work hard on it—to put part of my personality into it and stuff like that which is really—that’s the kind of person that I am. I need that creative kind of thing.”

At VendorBuilt, the limited choices for layout and color offered by *CommercialFolio* limited students’ creative options, but students were eager to exercise as much creativity as possible within those constraints. Many sought to make their portfolios visually appealing by selecting graphics and using color. For VendorBuilt’s Nancy, the most fun part of the portfolio project was finding pictures—especially animated pictures. She was particularly proud of the hidden messages she sent with her images. For example, she decorated her teaching philosophy page with an animated cartoon of a man “zipping his lips.” She said that what that really meant was, “I’m not going to tell you what I really think.”

Many students thought the program requirements were more suitable for the Elementary Education program than others. This was not surprising because the Elementary Education program was the largest in the department. Although Mallory, an Elementary Education major, liked fewer constraints, she counted herself fortunate in comparison to her friends in Special

Education and Secondary Education programs: She says, “Because I’m Elementary Ed, this works pretty well for me.”

In the researcher reflection section, I disclosed that my experience with an overly prescriptive portfolio was unsatisfying. I believe the number of requirements at VendorBuilt constrained the perceived value of the task. I think the data support this. I invite you, the reader, to make your own interpretation. I have included many of the participants’ quotes to aid you.

Self-revelation dilemma. Carney’s next dilemma was the self-revelation data. Students at Mason State had great flexibility in the program requirements and seemed relatively unconcerned with this dilemma. However, students at VendorBuilt confronted it as they included required artifacts they preferred not to include. Of all the required artifacts, students talked most about not wanting to include their ethnography projects. Anne specifically mentioned her attempts to sweep her ethnography “under the rug.”

Cognitive overload dilemma. The next dilemma was the cognitive overload dilemma. This was more evident at Mason State than VendorBuilt as students used tools they chose in ways they wished. Students wishfully spoke of needing more skill. On one hand, most VendorBuilt students lived within the constraints of their tools and requirements. The tool did not place an additional cognitive demand and the prescriptive requirements left little room to consider options. Recall that Mallory specifically stated that she had little opportunity to make good judgments—limiting her decision-making to “should I use green or pink?” On the other hand, Anne and Alicia spent considerable energy trying to figure out how to work around the constraints of their portfolio authoring system to present their work on their terms.

Dead end dilemma. The final of Carney’s dilemmas is that of the dead end. Students at both institutions faced this dilemma. Most decided they would not update their portfolios beyond

what is required of them for graduation. At Mason State, no one spoke of moving their portfolio off the university servers, although most had copies of their files on their laptops and knew how to burn them to CDs or save to jump drives. At VendorBuilt, students tried a variety of strategies to save their work beyond the term of their *CommercialFolio* subscription because most had decided they would not renew their subscriptions. Some printed a copy of their portfolio. Others saved the artifact files and created Microsoft *Word* documents of their reflections. Only Tucker knew the portfolio files could be burned to a CD and used outside of the subscription service, but he only revealed that fact once in my presence. The others had asked about this—and their professor had called *CommercialFolio* tech support for help—but all except Tucker believed this could not be done.¹⁴

Do they identify additional dilemmas?

¹⁴ Over the last several years, Dr. S had repeatedly called *CommercialFolio* tech support asking how students could back up their files or create a portfolio that could be browsed offline. Each time she did, she hung up the phone believing this was not possible. It is an option with the *CommercialFolio* service but the link to the feature says “export zipped HTML files” which may be too cryptic for most teacher education majors to recognize. After all the data for this project was collected, I told students who had participated in the final focus group how to do this, seeing no reason to withhold this information they considered so important. They were both surprised and pleased this capability existed. Dr. S could not understand why no one had shared this with her when she had called specifically seeking it. I believe this will enter the activity system at VendorBuilt. In fact, I overheard Dr. S share it with a student in a phone conversation on my last day on the campus.

Students at both institutions talked about the time demands of the task. Discussed under the production/consumption paradox section of Chapter 5, the time constraints forced students to make tradeoffs as they tried to balance the competing priorities of classes, part-time jobs, friends, and family with their desire to invest the time needed to complete their portfolios.

A Final Look at the Literature

In this section, we return to the portfolio literature to situate observations at Mason State University and VendorBuilt College within the broader context of electronic portfolios. According to the AAHE *Taxonomy of Portfolio Types* (2003), this study examined program-required, pre-service teacher evaluation portfolios. This description corresponds to the three main discriminators (context, author, and purpose) suggested by AAHE to facilitate discussions about portfolios.

Mason State University and VendorBuilt College recommended strikingly different tools for their pre-service teachers to use as they create portfolios. At Mason State, faculty and staff provided access to generic productivity tools for their students to use throughout the portfolio process. Portfolio leaders used *Rubigrade*, a customized system built in-house, to collect the data required for accreditation activities. At VendorBuilt College, portfolio leaders selected *CommercialFolio*, an online assessment management system (Barrett, 2003), and required students to purchase a subscription.

Like participants in earlier portfolio research, Piper (1999) for example, students at both VendorBuilt College and Mason State report the portfolio creation task requires a lot of time. In contrast to earlier portfolio work (Smith et al., 2001), Mason State and VendorBuilt appear to

offer sufficient access to human and technology resources for students as they construct their program-required portfolios. In fact, students at both institutions describe resource-rich contexts for their work and speak about how important those resources are for successful completion of their task. This abundance of resources is similar to what Wetzel and Strudler (2005b) found in their research with institutions thought to be accomplished users of electronic portfolio programs.

Piper (1999) and McKinney (1998) have previously reported that problems with technology can cause frustration among portfolio authors and students. At VendorBuilt College, student frustration was evident almost daily. Often, problems with the *CommercialFolio* tool performance exacerbated student frustration with the portfolio task. At Mason State, frustration with technology appeared to be less widespread. This may be a surprising observation for readers familiar with literature comparing these types of tools (Carney, 2002; Gibson & Barrett, 2002).

Early portfolio leaders (F. L. Paulson & P. R. Paulson, 1991; Shulman, 1998) write about the importance of student choice in the portfolio process. Shulman calls portfolio creation “a theoretical act” and Paulson and Paulson emphasize the individual’s involvement in the process. At Mason State, students talk about the degree to which they are free to make choices about both content and format in their portfolio task even though portfolios are organized around the INTASC principles. More recently, Wilkerson and Lang (2003) caution institutions that portfolio content must be “rigorously controlled” (paragraph 3) if portfolios are to be used for high stakes assessment. The portfolio policies at VendorBuilt College mirror the advice offered by Wilkerson and Lang.

Students at both institutions struggle with the question of audience and the conflicting purposes identified by Snyder, Lippincott, & Bower (1998a), Paulson and Paulson (1991), and

Carney (2001) when writing for different audiences. Although students talked about portfolios in the context of the job interview process, most were skeptical such use would be received well. This skepticism was due, in part, to the fact that electronic portfolios were more aligned with documenting standards than what students believed prospective employers would find important.

Portfolio literature emphasizes the benefits of portfolios for reflection (Lyons, 1998a; Seldin, 1997; Shulman, 1998). Richert (1990) and Robbins (2004) have examined ways to foster reflection. Despite the support in the literature, some students find guidelines for reflection to be restrictive (Borko et al., 1997) and the reflective act to be tiresome (Placier et al., 2001). Few students at Mason State and VendorBuilt displayed enthusiasm for the reflective process as implemented. Ironically, requirements for reflection tended to work against the very act the requirements were intended to foster.

Table 1 from Chapter 2 is repeated on the next pages. The final row in the table summarizes the results of this research.

Table 2: Table summarizing issues and concerns identified in research studies on portfolios.

Electronic?		Assessment issues	Creativity	Content knowledge	Context of portfolio authoring	External influences	Mentoring	Metacognition	Multiple purposes	Ownership	Pedagogical knowledge	Peer interactions	Professional development	Reflection	Self-expression	Technology skill development	Time involved	Tools
	Avraamidou & Zembal-Saul (2002 & 2003)				X			X						X				X
	Barrett (various)	X	X	X	X	X			X	X				X	X	X		X
	Baume, Yorke & Coffey (2004)	X																
	Beck, Livne, & Bear (2005)												X					
	Borko, Michalec, & Timmons (1997)								X	X	X			X	X		X	
E	Britten, Mullen, & Stuve (2003)			X							X					X		
E	Cambridge, D. (2005)									X					X			
PE	Carney (2001)		X	X		X			X	X	X			X	X		X	X
E	Cohn & Hibbits (2004)									X								
	Darling (2001)		X	X						X	X				X			
E	Derham (2003)	X																
E	ePort Consortium (2003)	X								X								X
	Gearhart & Herman (1998)	X			X													
E	Gibson (2004)	X				X				X								X
E	Gibson & Barrett (2002)																	X
E	Hartmann (2003 & 2004)				X						X	X	X	X				
	Heller, Sheingold, & Myford (1998)	X																

Electronic?		Assessment issues	Creativity	Content knowledge	Context of portfolio authoring	External influences	Mentoring	Metacognition	Multiple purposes	Ownership	Pedagogical knowledge	Peer interactions	Professional development	Reflection	Self-expression	Technology skill development	Time involved	Tools
	Hoel & Haugløykken (2004)											X						
E	Klenowski (2000)	X		X							X		X					
	Lyons (1998a & b)							X			X	X	X					
E	McKinney (1998)												X			X	X	X
E	McKinney, Perkins, & Jones (1995)	X															X	
	Paulson & Paulson (various)	X		X		X			X	X				X	X			
E	Piper (1999)		X											X	X	X	X	X
E	Placier, Fitzgerald, & Hall (2001)	X	X	X		X				X					X	X	X	
E	Robbins (2004)													X				
	Shulman (1998)	X		X		X	X			X	X	X	X	X			X	
	Snyder, Lippincott, Bower (1998a & b)								X									
E	Wetzel & Strudler (2005a)								X							X	X	X
	Wilkerson & Lang (2003 & 2004)	X																
	Zeichner & Wray (2001)				X									X				
E	Fiedler (2006)		X		X				X	X		X		X	X	X	X	X

Significance of This Work

The work described in this dissertation is significant in two ways. First, the work examines the student experience with the new genre of web-enabled database subscription services for portfolio authorship. These systems are growing in popularity and are increasingly used for high stakes decision-making. This research responds to calls (Roblyer, 2004, 2005; Roblyer & Knezek, 2003) for research to shape implementation of widely-used technologies and to examine impact on students.

The second area of significance is that this research demonstrates the utility of the CHAT framework as a lens to think about, observe, and analyze the complex act of portfolio authorship in Teacher Education programs. CHAT is particularly capable of sensitizing a researcher to examine the broader context of portfolio creation beyond the actions of an individual to include the pressures and demands of the society in which the individual is embedded. For this study, the cases were specifically bounded at institutional lines but the CHAT framework was applied more broadly to examine the larger phenomenon of Teacher Education.

Future Research

Not surprisingly, this research has led to more questions than I had as I began. Explaining those questions requires sharing some very subjective impressions.

What is the relationship, if any, between understanding of portfolio theory and satisfaction with the portfolio task? At the smaller VendorBuilt College, students appeared to have a solid understanding of portfolio theory and tended to be favorably disposed to it. They were frustrated by the tool they were using and were constrained by—and at times resentful

toward—the prescriptive requirements they faced. I wonder if they would have been more satisfied in a less restrictive environment. At Mason State, students seemed to have different levels of understanding of portfolio theory. It appeared students who were more thoroughly grounded in portfolio theory were more satisfied with the portfolio task. For several students, they developed this respect for portfolio theory in one of their early education classes under one or two specific professors’ instruction. Others spoke specifically about their dissatisfaction with the same class taught by other professors. It seemed these same students had less positive attitudes toward their portfolios.

To what extent does developing an electronic portfolio impact the preservice teachers’ attainment of technology skill as described in the ISTE NETS standards? Does the choice of portfolio authoring tool impact preservice teachers’ development of these skills? Some institutions implement electronic portfolios to help their pre-service teachers develop technology skills. It would be worthwhile to develop and administer an instrument to measure pre-service teachers’ development of skills described in the ISTE NETS standards to determine if electronic portfolio development enhances attainment of these skills. Perhaps this instrument could be administered prior to electronic portfolio development and then again at the conclusion of the portfolio process. Further, such an instrument could be used to examine how development of these skills differs across different tool environments. At Mason State, the pre-service teachers talked about having gained technology skills as a result of their portfolio development experience while their counterparts at VendorBuilt specifically said they did not feel they had grown technologically.

What are the preservice teachers’ experiences using tools to create an electronic portfolio? In what ways do the tools afford or constrain the tasks associated with electronic

portfolio authoring? These are the same questions that guided this study. In selecting Mason State and VendorBuilt College, I focused primarily on the type of tool used for the portfolio task with little attention to the requirements. Some of the drastic differences between institutions were due to the differences in requirements. Additional work in teasing apart the influence of the tools and the influence of the requirements on the experience added much insight to this study. Selecting institutions on different dimensions as represented in Table 1 would be informative.

Table 3. Suggested dimensions to select institutions for studies examining portfolio tools.

	Tool	Requirements
Study 1	Different	Matched
Study 2	Identical	Different

Under what conditions do written reflections enhance or inhibit the pre-service teachers' reflection on practice? The most reflective students struggled with the written reflections more than their less reflective peers. For the naturally reflective, the challenge was not in the reflection but in fitting their reflection into what was required by their respective programs.

Who is more likely to adopt each kind of electronic portfolio system? At Mason State University, PT³ grant money helped fund development of their in-house system to support their efforts. They had faculty committed to and capable of overseeing the task. The much smaller VendorBuilt College had no such financial support to work on a project of that scope, too few faculty to take on such a project, and a different accreditation environment to consider.

In what ways do the tools afford or constrain the tasks? In Chapter 1, I mentioned that it was ideal to investigate the preservice teacher experience with electronic portfolios throughout

research focusing on the utility of the preservice portfolio experience for teachers creating portfolios for continuing licensure and National Board Certification was invaluable.

What is the faculty experience using various tool to create and assess preservice teachers' electronic portfolios? Faculty are heavily impacted by an institution's move to electronic portfolios. Examining the impact of electronic portfolios on the curriculum, faculty assessment of student work, changes in the work habits of faculty, and the impact of these changes on faculty satisfaction in the new environment are all questions that deserve more investigation.

Do hiring officials use portfolios to make decisions about the teachers they hire? What would hiring officials find valuable in a preservice teacher's portfolio? I would be negligent if I did not include a research question or two from the pre-service teachers who contributed to this study. They spent many hours creating portfolios they hope demonstrates their commitment to and passion for teaching. They want to know if this time was spent well, and if not, how it could be better spent. It is a fair question.

APPENDIX A: IRB APPROVAL LETTER



Office of Research & Commercialization

March 29, 2005

Rebecca Fiedler
1600 Seabury Point Road
Palm Bay, FL 32907

Dear Ms. Fiedler:

With reference to your protocol #05-2497 entitled, "Using Activity Theory Analysis to Examine Electronic Portfolio Tools Mediation of the Preservice Teachers Authoring Experience and Demonstration of NETS-T Standards" I am enclosing for your records the approved, expedited document of the UCFIRB Form you had submitted to our office. **The expiration date for this study will be 3/27/06.** Should there be a need to extend this study, a Continuing Review form must be submitted to the IRB Office for review by the Chairman or full IRB at least one month prior to the expiration date. This is the responsibility of the investigator. **Please notify the IRB when you have completed this study.**

Please be advised that this approval is given for one year. Should there be any addendums or administrative changes to the already approved protocol, they must also be submitted to the Board through use of the Addendum/Modification Request form. Changes should not be initiated until written IRB approval is received. Adverse events should be reported to the IRB as they occur.

Should you have any questions, please do not hesitate to call me at 407-823-2901.

Please accept our best wishes for the success of your endeavors.

Cordially,

Barbara Ward

Barbara Ward, CIM
IRB Coordinator

Copy: IRB file

APPENDIX B: PORTFOLIO STUDY CODING GUIDE

Portfolio Study Coding

Author: _____ Year _____

Portfolio type: ☐ Preservice Teacher
 ☐ Inservice Teacher
 ☐ Higher Ed (P&T or Course or Program Eval)
 ☐ P-12

Type of Study: QL QN S CS Mixed Methods N=_____

Data source(s):

Zeichner & Wray's Critical Dimensions of Variation

Purpose: ☐ Assessment (Standards, credentialing, or licensing)
 ☐ Learning (Professional development or reflection)
 ☐ Employment

Control: Prescribed Self-selected Combination

Presentation: Text Electronic Tool(s):

Social Interaction: Solitary Peers ☐ Cooperating teacher
 ☐ Preservice Teacher
 ☐ Inservice Teacher
 ☐ University Teacher
 ☐ Students
 ☐ Parents

End: ☐ Assessment by rubric
 ☐ Assessment by other means
 ☐ "Show and tell" presentation
 ☐ Portfolio conference or dialogue

Stakes: L M H

Perspective examined: Students Faculty Assessors Other
Research Questions:

APPENDIX C: INTERVIEW PROTOCOLS

Focus Group Protocol for Mason State and VendorBuilt College

Hi. My name is Becky Fiedler and I'm a doctoral candidate at the University of Central Florida.

Purpose

First, I want to thank you for agreeing to participate in this research on pre-service teachers creating electronic portfolios. I would like to talk to you about your own experience to help me better understand what this process is like for you and other pre-service teachers. I want to remind you that participation is voluntary and that you do not need to answer any questions you do not want to answer. Before we get started, I would like to make sure each of you has signed an informed consent form.

Procedure

I will be taking notes and recording the discussion so that I do not miss anything you have to say and to remind me about questions for follow-up. I will transcribe the recording and analyze the transcripts. Your responses will be kept confidential. In fact, we are going to use the pseudonyms you have chosen for our conversation. I want this to be a group discussion, so feel free to respond to me and to other members in the group without waiting to be called on. However, I would appreciate it if only one person talked at a time. This discussion will last less than 60 minutes. If I need to, I might occasionally move the discussion along to talk about other things.

Before we begin, do you have any questions?

OK, thank you. Let's get started.

Interview question	Probes	Purpose	Research Question
Why are you making an electronic portfolio?	What will you do with it? How will you use it? Will others be using it, too? How?	To identify purposes and uses for the portfolio and choice of electronic	Perception of value and utility
Imagine that you are going to speak to the software designers about your experience. What would you like them to know?	What should they change? What should not change? What would you have liked to have, but did not?	To elicit information about the software tools.	Tool-related research question
Now, please imagine a similar conversation with your Dean. What would you share with the Dean?	What kind of support was helpful? What else did you need? Would you change anything?	Soliciting information about the implementation and requirements of the program	Dilemmas
You have been selected to mentor someone new to the program. What would you want to tell that person about the portfolio?	What concerns might they have? How do they choose artifacts? What is required? Where can they get help?	Looking for information about social interactions	Tool-related research questions Dilemmas
We have covered a lot of territory today. What else do you think is important for me to know?		To identify strongly held feelings or concerns Insight for round 2 interviews	

Thinkaloud protocol for Mason State University and VendorBuilt College

Purpose

First, I want to thank you for allowing me to sit with you during your work session today. As I have told you before, I am interested in learning more about pre-service teachers creating electronic portfolios. Today, I am especially interested in finding out how you think about your work and the tools you are using.

Procedure

Throughout today's work session, I would like for you to share your thoughts with me as you work. If you are trying to decide on something, please tell me what you are considering as you make your decision. If something is giving you trouble, please say that out loud, too. What I am asking you to do is difficult to remember. If you stop talking out loud, I am going to ask you to start again.

Today, with your permission, I will be videotaping you as you work. Before our time is up, I will stop the videotape. I might play parts of the tape for you and ask you if you can recall what you were thinking or to explain some of your actions.

Before we begin, do you have any questions?

OK, thank you. Let's get started.

Prompts

Be certain to prompt for answers to the following questions if the answers do not come out during the work session:

Comm Did you hide anything from others? Do you mind telling me a little about that and why you decided to hide it?

Comm Where did you usually work on your project? Why there?

Subj At any time during the portfolio creation process, did you feel conflicted by what you were trying to show or do? Please explain.

Subj How did you choose the artifacts to include in your portfolio?

Subj How did you decide what media to use?

Subj How did you decide which artifacts to include in your portfolio?

Subj How did you decide which tools to use?

Subj Tell me about “time” as it relates to your portfolio experience.

Subj What do you do to get technical help if you needed it?

Tools What did you use to create your electronic portfolio? What did you lack?

Tools Where did you do most of your thinking about this project? Why there?

Tools Where did you do most of your work on this project? Why there?

Tools Tell me about how easy or difficult it was to use the tools you had for this project. Which were easy to use and why? Which were difficult to use and why?

Comm Who, if anyone, helped you figure out how to use the tools you had? How?

Second Focus Group Protocol for Mason State

Welcome back for our last session.

Purpose

First, I want to thank you for agreeing to participate in this research on pre-service teachers creating electronic portfolios. I would like to talk to you about your own experience to help me better understand what this process is like for you and other pre-service teachers. I want to remind you that your participation is voluntary and that you don't need to answer any questions you do not want to answer.

Procedure

I will be taking notes and recording the discussion so that I do not miss anything you have to say and to remind me about questions for follow-up. I will transcribe the recording and analyze the transcripts. Your responses will be kept confidential. In fact, we are going to use the pseudonyms you have chosen for our conversation. I want this to be a group discussion, so feel free to respond to me and to other members in the group without waiting to be called on. However, I would appreciate it if only one person talked at a time. This discussion will last less than 60 minutes. If I need to, I might occasionally move the discussion along to talk about other things.

Before we begin, do you have any questions?

OK, thank you. Let's get started.

Interview question	Probes	Purpose	Research Question
Several of you have turned in your portfolios over the last day or two. How will this portfolio be assessed?	Who is assessing it? What are they looking for? How will the results be reported to you?	To identify student perceptions of assessment issues	Tool-related research question
Please tell me about <i>Rubigrade</i> .	What is it? How is it used? Have you used it? What do you think of it?	To identify purposes and uses for the portfolio and choice of electronic	Tool-related research question
Who makes decisions about your portfolio?	Who decides what goes in it? Who decides how it looks? Who decides how to use it?	Ownership issues	Value and utility
A couple of you mentioned the word “caring” when we spoke the first time. Tell me about “caring” as it relates to your experience here.	Teachers College? Faculty? Other students?	To follow up a surprising theme from the first round of interviews.	
How have others played a role in developing your portfolio?	Friends? Family? Faculty? Other University employees?	Solicit information about community	Community
What has been the most difficult part of your portfolio experience?	Technology? Content? Decisions?	To solicit areas of difficulty	Dilemma-related research question
What has been the most satisfying part of your portfolio experience?	Technology? Content? Decisions?		Value and utility

Over the past five weeks, you
have had the chance to tell me
many things. Is there anything
else I need to know that you
have not yet told me?

Second Focus Group Protocol for VendorBuilt College

Welcome back for our last session.

Purpose

First, I want to thank you for agreeing to participate in this research on pre-service teachers creating electronic portfolios. I would like to talk to you about your own experience to help me better understand what this process is like for you and other pre-service teachers. I want to remind you that your participation is voluntary and that you do not need to answer any questions you do not want to answer.

Procedure

I will be taking notes and recording the discussion so that I do not miss anything you have to say and to remind me about questions for follow-up. I will transcribe the recording and analyze the transcripts. Your responses will be kept confidential. In fact, we are going to use the pseudonyms you have chosen for our conversation. I want this to be a group discussion, so feel free to respond to me and to other members in the group without waiting to be called on. However, I would appreciate it if only one person talked at a time. This discussion will last less than 60 minutes. If I need to, I might occasionally move the discussion along to talk about other things.

Before we begin, do you have any questions?

OK, thank you. Let's get started.

Interview question	Probes	Purpose	Research Question
Several of you have turned in your portfolios over the last day or two. How will this portfolio be assessed?	Who is assessing it? What are they looking for? How will the results be reported to you?	To identify student perceptions of assessment issues	Tool-related research question
Now that you have completed your portfolio, how do you plan to use it?	Why or why not? How often? For what? For whom?	To identify purposes and uses for the portfolio	Tool-related research question
Who makes decisions about your portfolio?	Who decides what goes in it? Who decides how it looks? Who decides how to use it?	Ownership issues	Value and utility
Throughout this semester, I've heard a lot of words describing the portfolio experience. Now that it's done, what words come to mind?	How do you feel about this? How would you describe the value of this activity?	To capture a more "final" attitude about the task.	Value and utility
How have others played a role in developing your portfolio?	Friends? Family? Faculty? Other University employees?	Solicit information about community	Community
What has been the most difficult part of your portfolio experience?	Technology? Content? Decisions?	To solicit areas of difficulty	Dilemma-related research question
What has been the most satisfying part of your portfolio experience?	Technology? Content? Decisions?		Value and utility
Over the past semester, you've had the chance to tell me many things. Is there anything else I need to know that you have not yet told me?			

**APPENDIX D: INFORMATIONAL DOCUMENTS
FOR FACULTY AND STUDENTS**

Dear Faculty Member;

I'm a doctoral student conducting my dissertation research on digital portfolios and am writing to ask for your help in two areas:

1. I would like for you to distribute the attached flyer to eligible students; and
2. I am asking for your assistance in identifying potential research participants.

My overarching research goal is to better understand the preservice teacher's experience using tools to create their digital portfolio. I'll be examining the ways in which the tools afford or constrain the tasks associated with digital portfolio authoring. My visit to Mason State has been approved by the Dean and my protocol has been approved by my institution's IRB.

I have made arrangements to spend a summer term on your campus to speak to a handful of your preservice teachers about their digital portfolios. Dr. XXXXXXX (xxxxxxx@msu.edu) will be helping to facilitate my visit. I would appreciate your assistance in identifying participants for my research. Potential participants should be undergraduate preservice teachers majoring in secondary education. They should have completed Decision Point 1 and be enrolled in key courses in Decision Point 2 during the first summer session.

Students who participate in my research will be involved in two focus group sessions and one thinkaloud work session. I'll also ask participants to complete an online survey that will take approximately 40 minutes. I am offering \$10 for each focus group and work session and \$5 for completing the online survey. This is a total of \$35 for each participant.

It would be a tremendous help if you could take a few moments to identify students in the upper, middle, and lower third of students (when considering characteristics including academic performance, conscientiousness, strength of work submitted, and likely availability for research) and email your list to me at research@msfiedler.com. If you can provide email addresses for those students, that would be extremely helpful. If not, I'll get them through another avenue. Your input will remain confidential and will be used to cross-reference students who express interest in participating.

Thank you very much for any help you are willing to offer. I will be happy to answer any questions you might have about my research. If you would like to know more about me, you may visit my digital portfolio at <http://www.msfielder.com/myportfolio/>. I look forward to meeting you this summer.

Sincerely,
Rebecca Fiedler



Research Participants

to talk about digital portfolios



Who is eligible?

- Available Summer Term 1
- Currently working on your portfolio
- Willing to talk about your experiences
- Undergraduate students majoring in Secondary Education

What will you be asked to do?

1. Participate in 2 focus groups (one at start and one at end of term)
2. Allow researcher to join you once as you work on your portfolio
3. Complete an online survey that takes about 40 minutes

What's in it for you? Your time is valuable!

1. You will be paid \$10 to participate in each focus group and work session (total of \$30 for approximately 3 hours).
2. You will be paid \$5 to complete the online survey.



Think you might be interested?

Send an email to research@msfiedler.com. You will receive more details about the research so you can decide if you would like to participate.

Dear Preservice Teacher,

Thank you for contacting me about my research. I will use this email to tell you a little about me, my research, and how you can participate. If you have additional questions, I'll be happy to answer them for you.

I'm a doctoral student at the University of Central Florida in Orlando. I'm writing my dissertation on digital portfolios in teacher education. I'm interested in what preservice teachers think about creating digital portfolios and the tools they use to create them. Many other researchers share this interest. I'd like to speak to you about your experiences creating your digital portfolio and will be living on your campus for Summer 1 term so I can have a conversation with you about this important topic.

Participation

If you agree to be involved in my research, I'll ask you to participate in two focus groups. A focus group is a relaxed type of interview where several people sit around a table and talk about a specific topic. You might meet new people or visit with old friends. It's very likely you will share good ideas. Some people think participating in a focus group is fun! I plan to have around five people in each focus group and will do my best to make arrangements to meet at a time and place that is convenient for everyone. We will spend about an hour talking about your digital portfolios. One of the focus groups will be held very near the beginning of the Summer 1 term and the other very near the end of the Summer 1 term. These will be audiotaped so I don't lose track of anything you tell me during the focus group.

Sometime during the middle of the semester, I'll ask to do a thinkaloud work session with you. This is a private session where you will work on your digital portfolio and I will watch. I'll ask you to tell me what you're thinking as you complete the tasks you choose to do in front of me. I will have a video camera set up behind you to keep track of what you are doing as you are talking.

Near the end of the semester, I will ask you to complete an online survey. This survey asks about using technology in teaching and should take about 40 minutes to complete.

One of the challenges any researcher faces is determining if his or her interpretation of what people tell them is accurate. After I'm finished with writing up my findings, I will give you the chance to review my to tell me if I understood or misunderstood the things you told me during our time together. It's very important to me that I accurately capture your views on digital portfolios and I want to give you a chance to review my analysis.

Compensation

I value your time and know that you probably have many things competing for your time and attention. To thank you for sharing your time with me, I will give you \$10 cash for each focus group and work session. I'll also give you \$5 to complete the online survey. This is a total of \$35 if you participate in each aspect of the research study.

What I Will Do With Your Information

I am conducting this research to in order to write my dissertation. Information you share with me will be analyzed for use in my dissertation and in related publications and writings. With your permission, I may also use excerpts of the audio and videotapes to include in my dissertation, in presentations at professional conferences, and in professional publications. To protect your anonymity, I will use filtering techniques to blur your face on the video and alter your voice on audio.

Informed Consent

Researchers and universities must adhere to a code of ethics. An important part of that code of ethics is that those participating in research agree to participate and know what is ahead of them if they decide to participate. This research is no exception. When I see you this summer, I will ask you to sign an informed consent document. This document tells you about the focus groups and work session, that your participation is voluntary, that your responses remain confidential, and that I will use the information you share with me for my dissertation and professional presentations and publications. Signing the informed consent form gives me permission to report your responses anonymously in the final manuscript of my dissertation and related writings.

Logistics

If you're interested in participating, please let me know and give me your email address and phone number so I can contact you. I will probably contact you using email unless you tell me you prefer a phone call.

Please try to give me an idea of when you think you will likely be able to meet for the first focus group. I will begin to coordinate schedules.

If you have additional questions you'd like me to answer, please don't hesitate to contact me. Email is the most reliable way to get in touch with me, but you can also call my cell phone at 321-230-2615.

I look forward to meeting you this semester and hearing about your digital portfolio.

Sincerely,
Rebecca Fiedler

APPENDIX E: TECHNOLOGY USED

Throughout work at Mason State University and VendorBuilt College, I focused on the portfolio authors' interactions, uses, and impacts of the tools on their work. This is, after all, a central interest of the CHAT framework. I was repeatedly surprised that the dissertation task required more tools, software, and techniques than I originally anticipated as I collected and preserved de-personalized data for this project. Perhaps I noticed this trend with a heightened awareness. It seems appropriate to include information about the tools used to author this dissertation. This glossary offers brief descriptions of the tools, how I used them, and the purposes for which I used them, along with the hope that this inventory will help others as they consider ways to approach their own research projects.

Adobe Photoshop—*Adobe Photoshop* is photo editing software. I used it to resize pictures and to edit the sign at Mason State University's hardware support booth to say "Hardware Hut," to resize photos of the research sites, and to mask photos of individuals.

Adobe Acrobat—*Adobe Acrobat* lets users convert files into Portable Document Format (PDF) to maximize file compatibility and retain document formatting across different computer platforms. *Adobe Acrobat* is currently the preferred software to create an electronic thesis or dissertation (ETD).

Airport Express—The Airport Express is Apple's 802.11g mobile base station. This device allowed me to share the Internet connections in hotels and Mason State's student housing between multiple wireless-enabled computers while enjoying the convenience and freedom of wireless Internet access on my laptop.

ATLAS.ti—*ATLAS.ti* is a member of the class of software known as computer assisted qualitative data analysis software (CAQDAS). From the ATLAS.ti web page Frequently Asked Questions one learns that "*ATLAS.ti* stands for "Archiv für Technik, Lebenswelt und

Alltagssprache" [Archive for Technology, the Life World and Everyday Language]. The extension "ti" stands for "text interpretation." I used *ATLAS.ti* to analyze the qualitative data I collected. Additionally, *ATLAS.ti* has an active mailing list with knowledgeable users who are quick to respond to requests for help and advice. I joined this list in August 2005.

Audacity - *Audacity* is a free, open source, easy-to-use, cross platform tool to edit audio files. I used it to extract the audio clips needed in my dissertation and filter participants' voices to protect their identity.

Audio editing - Audio editing software enables a user to edit sound files in a variety of ways including sound filtering, cuts, and changes in sequence. I needed to extract specific audio clips and filter participants' voices to protect their identity. I used *Audacity*, a free, open source, easy-to-use, cross platform tool.

Audio recorders—Digital audio recorders allow users to capture sounds digitally. I needed this capability for interviews and occasionally recording my own field notes. My primary recorder was a Sony ICD ST-25 digital recorder. I chose this recorder for its high accuracy with *Dragon Naturally Speaking* voice recognition software. In case the digital recorder failed, I also used a Sony M-430 analog recorder as a backup. Once the interviews were completed, I used the digital recorder, Sony Digital Editing software, and a USB cable to move the audio files to my laptop for further use.

Bibliography management software—Bibliography management software streamlines the maintenance, organization, and formatting of reference citations. Throughout my doctoral program, I used *EndNote* to manage my references.

Chat—Although infrequently used, audio and video chats offered an alternative way to communicate with remote committee members. We used iSight cameras and Macintosh computers for the hardware to support these chats.

Clock—A clock helps an observer understand the timing of events and an interviewer to manage the time an interview takes. The form factor of my clock is that of a tube about six inches long and one inch in diameter. The display was large enough that I could monitor the time without the socially awkward need to glance at a watch. Furthermore, it had an alarm feature to help me wake on time and could be used as a flashlight when necessary.

Computer Assisted Qualitative Data Analysis Software (CAQDAS)—CAQDAS software allows researchers to analyze data not amenable to formal, statistical approaches. I used *ATLAS.ti* for this type of analysis.

Desktop computer - I ran most of my software on an Apple Macintosh G5 desktop computer. I opted for the 20-inch monitor, allowing simultaneous viewing of two open documents when working with text. Most often, the two documents were an *Inspiration* outline and a chapter draft. The larger monitor size made the video editing work more enjoyable and a gigabyte of RAM made quick work of video rendering.

Digital camera—Digital cameras allow users to capture still images of events or brief video clips. I wanted to capture pictures of facilities at the research site and participant interactions. I used a Canon Elph digital camera. Although it is several years old, it was sufficient for the task. The small size and hard case was convenient and resistant to damage.

Dragon Naturally Speaking—As I began data collection, *Dragon Naturally Speaking*, by Scansoft, was the highest rated voice recognition software on the market. I used it to transcribe interviews. (See *transcriptions* glossary entry for details). However, before using it for

interviews, I needed to train it for the idiosyncrasies of my pronunciation. I decided to accomplish the training task by dictating my field notes each day. This was a slow process at first, but eventually, accuracy was nearly 100%.

Electronic Theses and Dissertations (ETD)—An electronic thesis or dissertation is published electronically, rather than printed and bound. A growing number of universities and libraries are promoting ETDs as a way to offer wider access to research and conserve space in libraries. Additionally, an ETD allows scholars to incorporate other file types to enhance the presentation of their research. As I complete my dissertation, the University of Central Florida has only recently switched to producing ETDs. They are created with *Adobe Acrobat*.

Email—Electronic mail allows users to send electronic messages and files via computer networks. I used email to keep in touch with committee members to arrange logistics, share drafts, offer progress reports, and solicit feedback. Points of contact at the research sites read and responded to email for discussions on logistical arrangements. I used the Macintosh Mail client.

Endnote —*Endnote* is bibliography management software that allows users to track, organize, and format citations. I used *Endnote* throughout my doctoral program and dissertation.

External hard drives—I used two 400-GB USB 2.0 external hard drives for video editing. One served as the scratch disk and the other as the backup for the video data. To back up the Toshiba laptop computer, I used a Seagate 100 GB portable USB drive. Finally, I backed up the Macintosh desktop data to a Lacie 250 GB drive.

Final Cut Pro—*Final Cut Pro* is video editing software. I used it to capture video from participant work sessions and filter participants' voices so they could retain their confidentiality. Once this was completed, I used *Final Cut Pro* to edit the clips needed in my dissertation.

Flat panel monitor—Attaching an additional 17” IBM flat panel monitor to my Toshiba laptop offered extra screen space enabling me to keep multiple windows open. This was especially useful when using *ATLAS.ti*.

Graphic organizer—Graphic organizer software lets users graphically represent their ideas for planning and organizing. I used *Inspiration* to plan the structure and content for my dissertation.

Headset microphone—I used an Andrea anti-noise NC-61 headset microphone for dictation and transcription. According to Scansoft, makers of *Dragon Naturally Speaking*, this microphone was one of the most accurate on the market. To transcribe the interviews, I played the recording through the earpiece and repeated the conversation into *Dragon Naturally Speaking* software to transcribe the interviews. I used the software that shipped with the Sony digital recorder to control the playback speed, pause, and rewind the recording.

Inspiration—*Inspiration* is graphic organizer software that lets users graphically represent ideas for planning and organizing. I used *Inspiration* to outline each chapter and keep track of work I wanted to cite throughout the dissertation process. Then I used the detailed outline to draft each chapter. Each chapter was an individual *Inspiration* file and were linked by another file based on my table of contents.

iSight camera—Although infrequently used, audio and video chats offered an alternative way to communicate with remote committee members. We used iSight cameras and Macintosh computers for the hardware to support these chats.

Laptop computer—I used a Toshiba laptop with 768 MB of RAM running *Windows XP Home Edition* for *ATLAS.ti* and *Dragon Naturally Speaking*. These applications only run on the

Windows platform. For most of the time I was working at home, I attached a 17” IBM flat panel monitor so I could keep multiple windows open running *ATLAS.ti*. See Figure 60.



Figure 31: Laptop and external monitor for *ATLAS.ti* work.

Library databases—The University subscribes to a wide range of Internet-based electronic databases to provide access to a wide variety of journals and scholarly publications. I used these databases to conduct my literature review in conjunction with ILLiad, an interlibrary loan system that delivers article requests electronically. However, not everything I needed was available electronically, necessitating numerous trips to the bricks and mortar library on campus.

Photo editing software—Photo editing software allows users to modify digital photos in a variety of ways including appearance, size, and quality. I needed a way to edit the sign at Mason State University’s hardware support booth to say “Hardware Hut,” to resize photos of the research sites, and to mask photos of individuals. I used *Adobe Photoshop*.

Productivity software—Productivity software generally includes word processing and spreadsheet capabilities. Like most students in my cohort, I used Microsoft *Word* for basic word processing tasks and *Excel* for some of the simple data management tasks.

Rechargeable batteries—Rechargeable batteries are reusable power sources for small electronic devices. I used a number of Energizer brand rechargeable batteries to keep the wireless keyboards, mice, microphones, and audio recorders running throughout my interviews and work sessions. The rechargeable batteries offered a convenient alternative to last minute trips to the store.

Screen recording software—To create multimedia video tours of portfolios at each institution, I used screen recording software and a headset microphone to capture video and audio.

Sony digital video camera—To record participant work sessions, I placed a Sony digital video camera on a tripod behind the research participant. The individual wore a wireless lavalier microphone to capture their words.

Transcriptions - To transcribe the interviews, I played the recording of the interviews through the earpiece of my headset microphone and repeated the conversation into the *Dragon Naturally Speaking* software. At the beginning of this process, I used the software that shipped with the Sony digital recorder to control the playback speed, pause, and rewind the recording. Later, I discovered this process was easier using *Transcriva* on my iBook for the audio playback. To do this, I placed the iBook and Toshiba laptops side-by-side. I plugged the microphone jack into the sound card of the Toshiba and the headphone jack into the iBook. See Figure 61. I used *Transcriva* to listen to and control the audio file through the iBook using the key combination of

Command + Space. I spoke what I was hearing into the *Dragon Naturally Speaking* software through the Toshiba laptop.



Figure 32: Macintosh and PC setup for transcription.

Transcriva - *Transcriva* is inexpensive software available for the Macintosh OS X computer. It facilitates interview transcription by combining supported audio file types with user-generated text presented in a chat-like interface. The tool offers variable speed for audio playback and supports transcript exports to common file formats including text and rich text. I typically used *Transcriva* in conjunction with *Dragon Naturally Speaking* to transcribe individual and focus group interviews using the process described under the *transcriptions* glossary entry.

Video editing—Video editing software allows the user to capture and edit video data. I used Apple's *Final Cut Pro* to capture video from participant work sessions and filter

participants' voices to protect their identity. Once this was completed, I used *Final Cut Pro* to edit the clips needed in my dissertation.

Video recorders—Video recorders allow users to capture both moving images and sounds of an event. To record participant work sessions, I placed a Sony digital video camera on a tripod behind the research participant. The individuals wore a wireless lavalier microphone to capture their words.

Virtual Private Network (VPN)—VPNs allow users to simulate their electronic presence on a computer network to use the network resources. This technology enabled me to retrieve documents from the library's electronic databases and to send email through the university's mail server when I was living or working outside the area.

Voice recognition software—Voice recognition software allows users to speak into a computer microphone and have their words reduced to text. I used *Dragon Naturally Speaking* voice recognition software to transcribe field notes and interviews. The process is more fully described in the *Dragon Naturally Speaking* entry.

Weblog—Weblogs, often called blogs, offer an alternative method to quickly and easily publish to the Internet. I used *Blogger*, a free weblog service, to maintain a weblog throughout the dissertation process. My blog was a repository for emerging ideas and a way to share interesting tidbits of information about the dissertation process. Two committee members read it and occasionally offered comments and feedback based on what they read. More importantly, it helped me reflect on what I was reading and thinking.

APPENDIX F: INFORMED CONSENT LETTER

Informed Consent

April 1, 2005

Dear Preservice Teacher:

My name is Rebecca Fiedler and I am a doctoral candidate at the University of Central Florida. My dissertation research focuses on the experience of preservice teachers as they create their electronic portfolios. I am working under the supervision of Drs. Donna Baumbach and Gail West. The scientific purpose of this research is to better understand how the use of specific electronic tools mediates the experience of creating program-required electronic portfolios and to understand the decisions and dilemmas portfolio authors face as they create their electronic portfolios.

Participation in this research involves participating in two focus group interviews (one near the beginning of the semester and one near the end) and allowing me to sit with you during one portfolio work session (near the middle of the semester). Each will last less than 1 hour. I will also ask you to complete an online multiple-choice questionnaire with approximately 90 items. Your comments in the focus groups will be available to other focus group members. Comments made in personal messages to me or during private conversations with me will remain confidential. For write-ups and presentations I will use pseudonyms to protect your confidentiality. Interviews and work session will be conducted at a time and place convenient to you. With your permission, the interviews will be audiotaped and the work session will be videotaped. Videotaping for the work session will be from behind you with the camera focusing on the computer screen and work area. I will be the only person with access to the tape, which will be stored on my computer hard drive with backups in a closet at my home. I will only use excerpts of the tapes with your permission. Any further use of audio and/or videotape beyond researcher analysis (such as in professional presentations or electronic dissertation) will use filtering techniques to blur faces and alter voices. I will offer you the opportunity to review my analysis. Once the study has been completed and you have reviewed my analysis, I will destroy all contact information I have for you. However, I will share my analysis of what you share with me in my written dissertation, at my oral defense, at professional conferences, and in professional publications.

Your participation in this project is voluntary. You do not have to answer any question(s) that you do not wish to answer. You may choose not to participate in this research, and you may withdraw at any time without consequence. There are no direct benefits for participation. You will receive \$10 to participate in each focus group session and the work session. You will receive \$5 to complete the online questionnaire. These will take place outside of your regularly scheduled class time. There is no anticipated risk associated with participation in this research, although some people may feel discomfort talking about their experiences or being interviewed.

By signing this letter, you give me permission to report your responses anonymously in the final manuscript of my dissertation and related writings. If you have any questions or comments about this research, please contact me (becky@msfiedler.com) or Dr. Gail West (gwest@mail.ucf). Questions or concerns about research participants' rights may be directed to the UCFIRB office, University of Central Florida Office of Research, Orlando Tech Center, 12443 Research Parkway, Suite 302, Orlando, FL 32826. The phone number is (407) 823-2901. Sincerely,
Rebecca Fiedler

_____ I have read the procedure described above and voluntarily agree to participate in this research and have received a copy of this description. I am over 18 years of age.

_____ I give permission to use audio and video excerpts for dissertation and professional presentations with the understanding that you will use filtering technologies to blur my face and alter my voice.

_____ I would like to receive a copy of the research once it is completed.

_____ I wish to participate in the research, but do not agree to be audio or videotaped.

_____/_____
Participant Date

_____/_____
Principal Investigator Date

APPENDIX G: DEVELOPING CODES

After data collection is completed, the qualitative researcher must find a way to organize the corpus of that data into manageable and meaningful units. Developing a coding system is an essential step in the analysis process. Traditionally, this task has been done manually although some researchers “eyeball” the data by reading it and writing their interpretations and analysis from memory (Bogdan & Biklen, 2003). Other techniques include writing notes in the margins of documents and transcripts; color-coding passages with pencils, highlighters, sticky notes and sticky dots; and cutting up documents and sorting into piles and file folders.

Computer-assisted data analysis offers benefits to the manual approach as the researcher leverages the computer’s capabilities for storage, organization, and retrieval. Digital files take relatively small amounts of space to store and files can be organized and reorganized without destruction. Once codes are assigned to units of data, qualitative data analysis (QDA) software facilitates retrieval of the various units by assigned code and permits sophisticated searches. QDA software accommodates manual coding, but can also automate repetitive tasks such as assigning a participant code each time that individual’s comments appear in a transcript.

Factors that influenced the codes for this project include the research subjects themselves, the research questions, and the CHAT theoretical framework. To determine the codes for this project, I used both inductive and deductive techniques. I started the coding while still in the field. I read through the data several times, allowing myself to become sensitized to what participants were saying and doing. Gradually, patterns and meanings began to emerge and I began coding the data I had collected using those codes. I coded all of the Mason State University data (with the exception of the thinkaloud work sessions) in this way to get a sense of the data as a whole from the participants’ perspective. Once that task was completed, I reviewed the CHAT model and my research questions to develop a “start” list of codes as advocated by

Miles and Huberman (1994). See Figure 31. Once generated, I imported this list into *ATLAS.ti* to use as I reread and recoded the Mason State data.

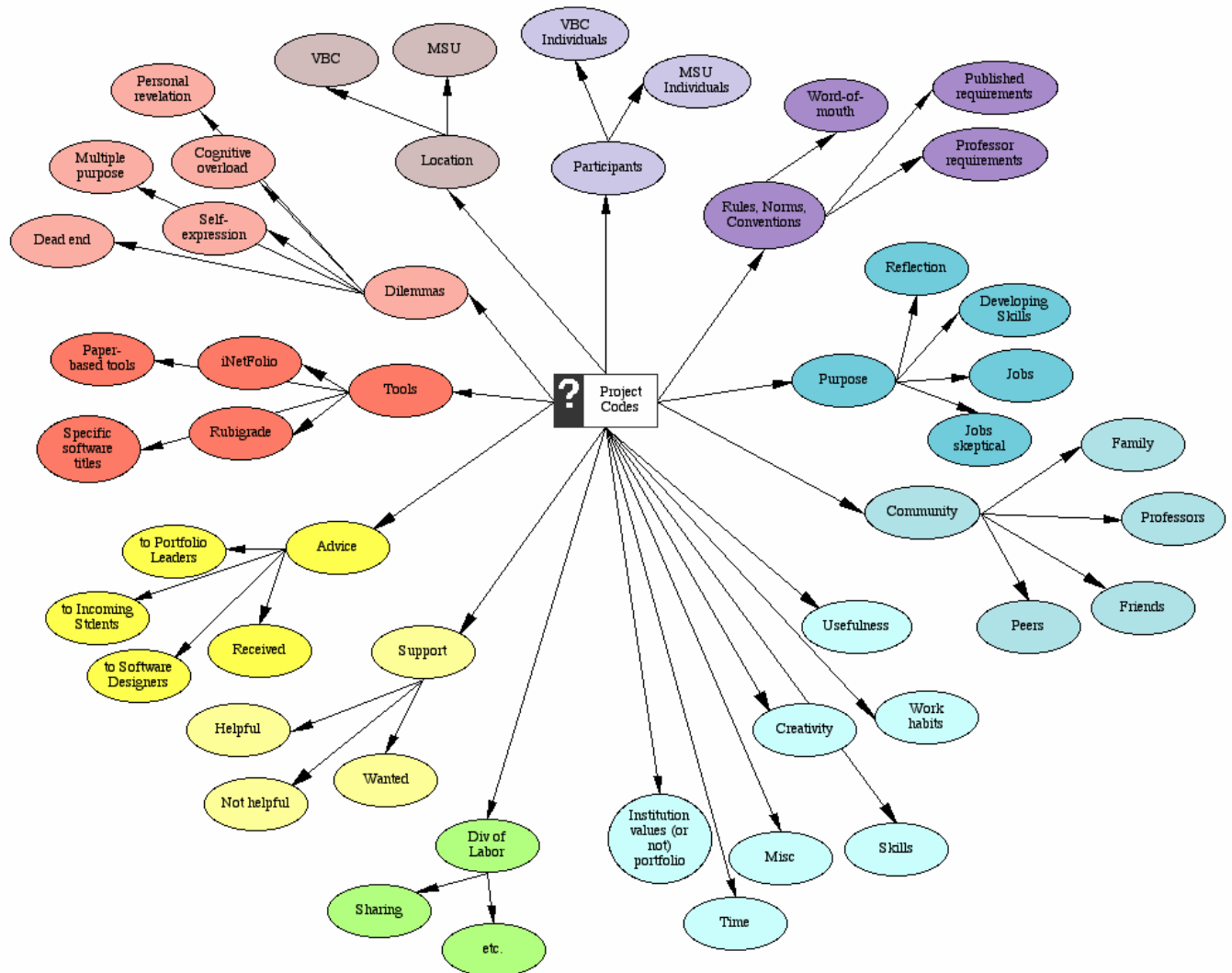


Figure 33. Initial project codes.

As I worked with the codes, I began to define them more clearly and noted the definitions in the comment field of the code. This practice helped me reground myself in the meaning of the codes as the project progressed. This was especially important as I began to code the data from

VendorBuilt College and was away from the coding task for a several weeks. The need for more codes emerged while others were eliminated as the project progressed.

Researchers must deal with several challenges as they develop codes (Patton, 2001). The first of these is *convergence* or determining which pieces of data fit together. *Internal homogeneity* is the criterion where a researcher determines how well units in a specific code hold together in meaningful ways. *External homogeneity* is a second criterion that engages the researcher in determining codes distinct from others. Additionally, issues of *divergence* occupy the researcher who must saturate categories, extend understanding from what is already known, make connections among various items, integrate results, and draw boundaries around the task. The task of developing codes may begin before fieldwork and is likely to extend through the entire analysis phase as the researcher repeatedly travels back and forth from the data to the classification scheme.

The coding task, as I performed it, was a labor-intensive task. I reread field notes, listened to audio recordings of interviews, watched thinkaloud work session videos, and transcribed interviews and work sessions. Only then did I assign codes to units of data, whether they were phrases, sentences, or paragraphs. Many meaning units had multiple codes as participants conveyed complex ideas, dilemmas, and contradictions. Although I used the auto-coding capability of ATLAS.ti to code speakers and a small handful of concepts, most coding was done manually. I made multiple trips through the data as new codes and insights emerged and old codes either decayed or solidified. Some codes became too populated and were split apart to make them more useful. Other codes remained sketchy and were combined to a higher level of abstraction. Throughout the coding task, I tried to remain open to noticing unexpected

patterns in the data. These new insights usually necessitated a review of previously coded documents as I looked for data I might have previously overlooked.

APPENDIX H: STANDARDS

Table 4. Comparison of INTASC principles and Florida Educator Accomplished Practices.

INTASC Principles	Florida Educator Accomplished Practices
<p>1 SUBJECT MATTER Understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and can create learning experiences that make these aspects of subject matter meaningful for students</p>	<p>8 KNOWLEDGE OF SUBJECT MATTER Demonstrates knowledge and understanding of the subject matter</p>
<p>2 STUDENT LEARNING Understands how children and youth learn and develop and can provide learning opportunities that support their intellectual, social, and personal development</p>	<p>7 HUMAN DEVELOPMENT AND LEARNING Uses an understanding of learning and human development to provide a positive learning environment which supports the intellectual, personal and social development of all students</p>
<p>3 DIVERSE LEARNERS Understands how learners differ in their approaches to learning and creates instructional opportunities that are adapted to learners from diverse cultural backgrounds and with exceptionalities</p>	<p>5 DIVERSITY Uses teaching and learning strategies that reflect each student's culture, learning styles, special needs, and socio-economic background</p>
<p>4 INSTRUCTIONAL STRATEGIES Understands and uses a variety of instructional strategies to encourage the students' development of critical thinking, problem solving, and performance skills</p>	<p>4 CRITICAL THINKING Uses appropriate techniques and strategies which promote and enhance critical, creative, and evaluative thinking capabilities of students</p>
	<p>12 TECHNOLOGY Uses appropriate technology in teaching and learning processes</p>

INTASC Principles	Florida Educator Accomplished Practices
<p>5 LEARNING ENVIRONMENT Uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation</p>	<p>9 LEARNING ENVIRONMENTS Creates and maintains positive learning environments in which students are actively engaged in learning, social interaction, cooperative learning, and self-motivation</p>
<p>6 COMMUNICATION Uses knowledge of effective verbal, non-verbal and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.</p>	<p>2 COMMUNICATION Uses effective communication techniques with students and all other stakeholders</p>
<p>7 PLANNING INSTRUCTION Plans and manages instruction based upon knowledge of subject matter, students, the community, and curriculum goals</p>	<p>10 PLANNING Plans, implements, and evaluates effective instruction in a variety of learning environments</p>
<p>8 ASSESSMENT Understands and uses formal and informal and informal assessment strategies to evaluate and ensure the continuous intellectual, social, and physical development of his/her learners</p>	<p>1 ASSESSMENT Uses assessment strategies to assist the continuous development of the learner</p>

INTASC Principles	Florida Educator Accomplished Practices
<p>9 REFLECTION & PROFESSIONAL DEVELOPMENT</p> <p>Is a reflective practitioner who continually evaluates the effects of his/her choices and actions on others and who actively seeks out opportunities to grow professionally</p>	<p>3 CONTINUOUS IMPROVEMENT</p> <p>Engages in continuous professional quality improvement for self and school</p>
<p>10 COLLABORATION, ETHICS, & RELATIONSHIPS</p> <p>Communicates and interacts with parents/guardians, families, school colleagues, and the community to support the students' learning and well-being.</p>	<p>6 ETHICS</p> <p>Adheres to Code of Ethics and Principles of Professional Conduct of the Education Profession in Florida</p>
	<p>11 ROLE OF THE TEACHER</p> <p>Works with various education professionals, parents, and other stakeholders in the continuous improvement of the educational experiences of students</p>

APPENDIX I: TRANSCRIPT OF MSU PORTFOLIOS MOVIE

Portfolios at Mason State are organized around the INTASC principles. By the end of the program, pre-service teachers will have done three things for each standard. First, they will have identified three artifacts that offer evidence of meeting each standard. Second, they will have reflected on those artifacts. Finally, they will have provided a rationale for including each of the selected artifacts. Some programs provide templates for students to use as they begin developing their portfolios. The basic template for Elementary Education students is yellow and white. Most students made some changes to that basic template. Shannon's is the first example. See Figure 32.

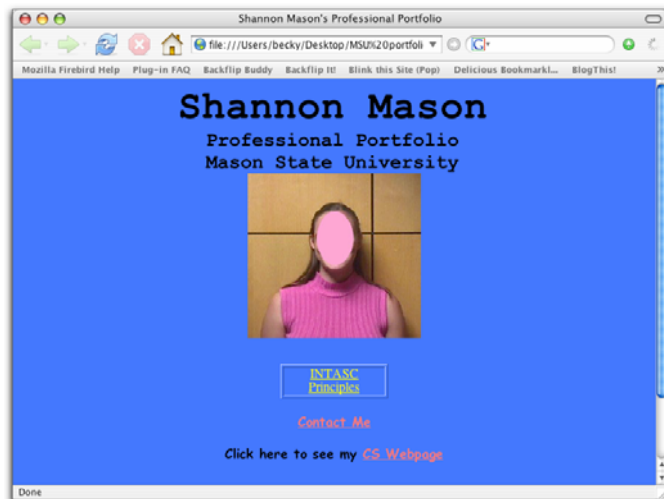


Figure 34. Shannon's home page based on Mason State's template.

She changed the background of her home page and replaced the Mason State logo with her own picture. Her INTASC principles page maintains the look and layout of the template. See Figure 33.

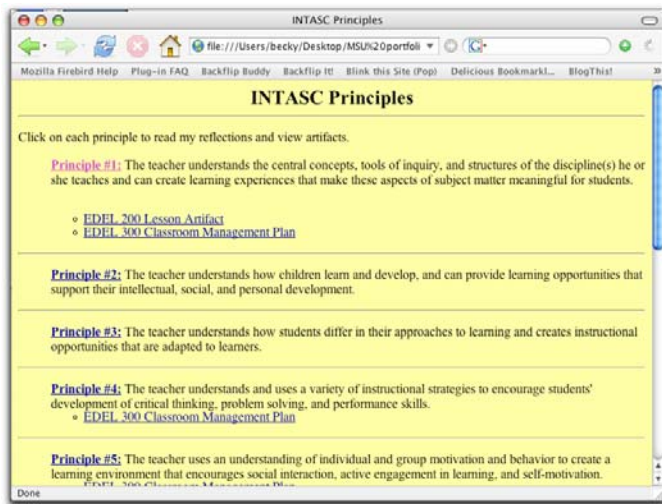


Figure 35. Shannon's INTASC principles page based on MSU's portfolio template.

For the individual standards pages, Shannon chose to change the white background to violet. See Figure 34.

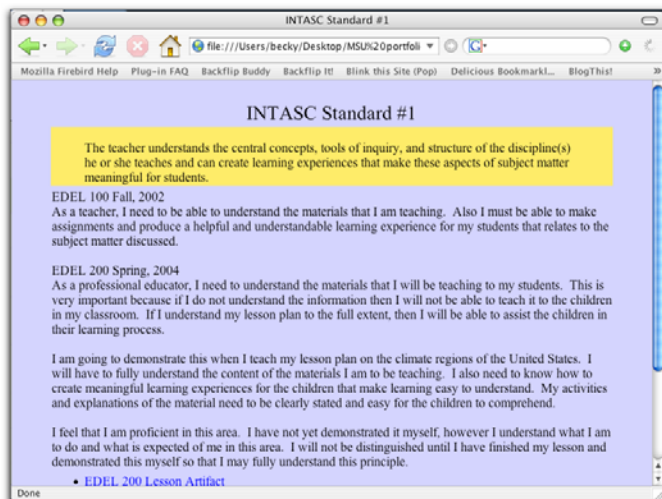


Figure 36. One of Shannon's INTASC standards pages based on MSU's portfolio template.

Carol did a bit of modification to her portfolio template—using different colors for different levels of her portfolio structure. The top page in her site uses one color scheme. See Figure 35.

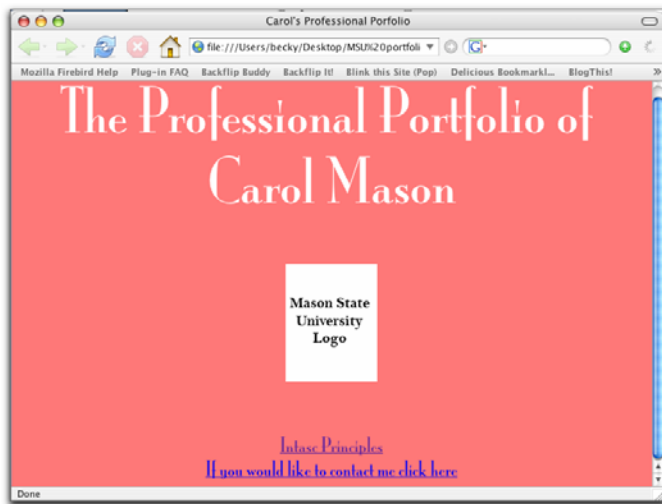


Figure 37. Carol's home page based on MSU's portfolio template.

She has another color scheme on the INTASC principles page. See Figure 36.

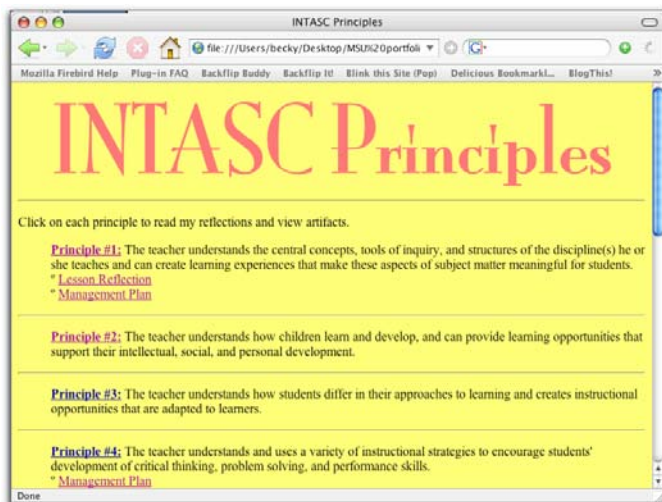


Figure 38. Carol's INTASC principles page based on MSU's portfolio template.

For each page of the INTASC standards, she consistently applies another color scheme.

See Figure 37.

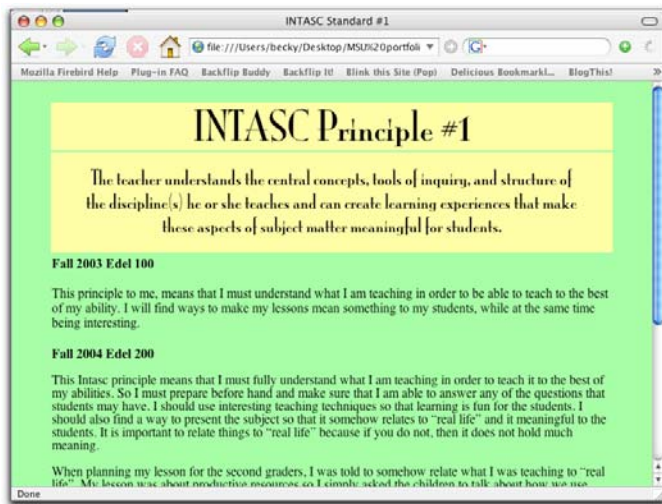


Figure 39. One of Carol's INTASC principles pages based on MSU's portfolio template.

Finally, her artifacts use another color scheme. (See Figure 38.)

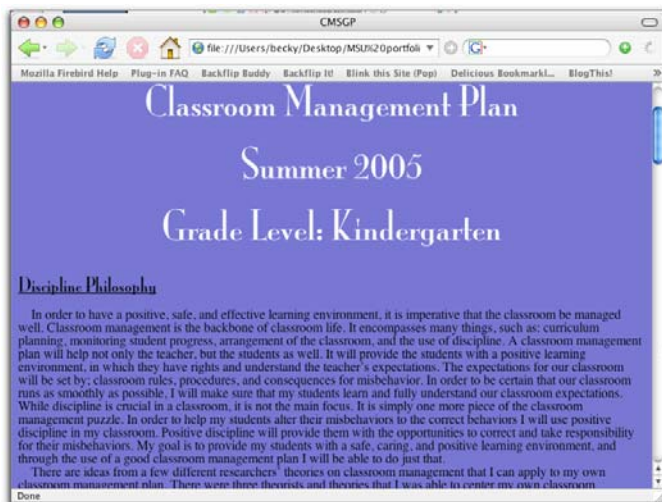


Figure 40. Carol chooses a different color scheme for one of her artifacts.

This is Amanda's portfolio. She has chosen to add a pastel background. See Figure 41.

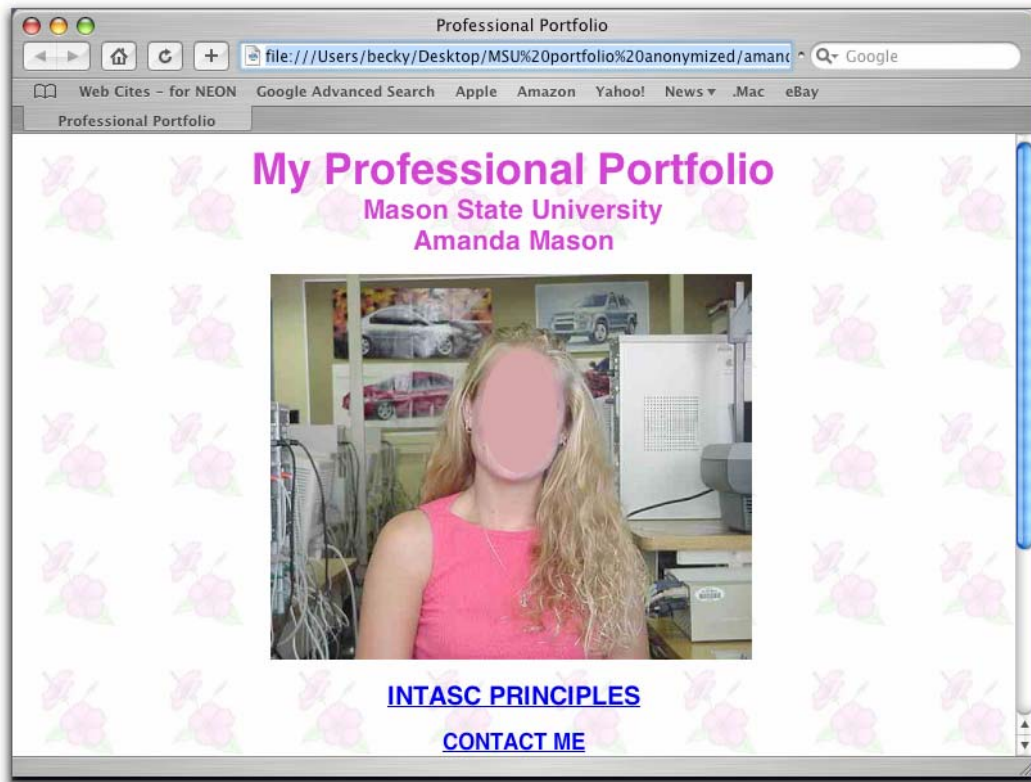


Figure 41. Amanda modifies MSU's template with a background and color scheme.

On the page listing the INTASC standards, notice the fundamental structure is that of the template, but with her background and color scheme. See Figure 42.

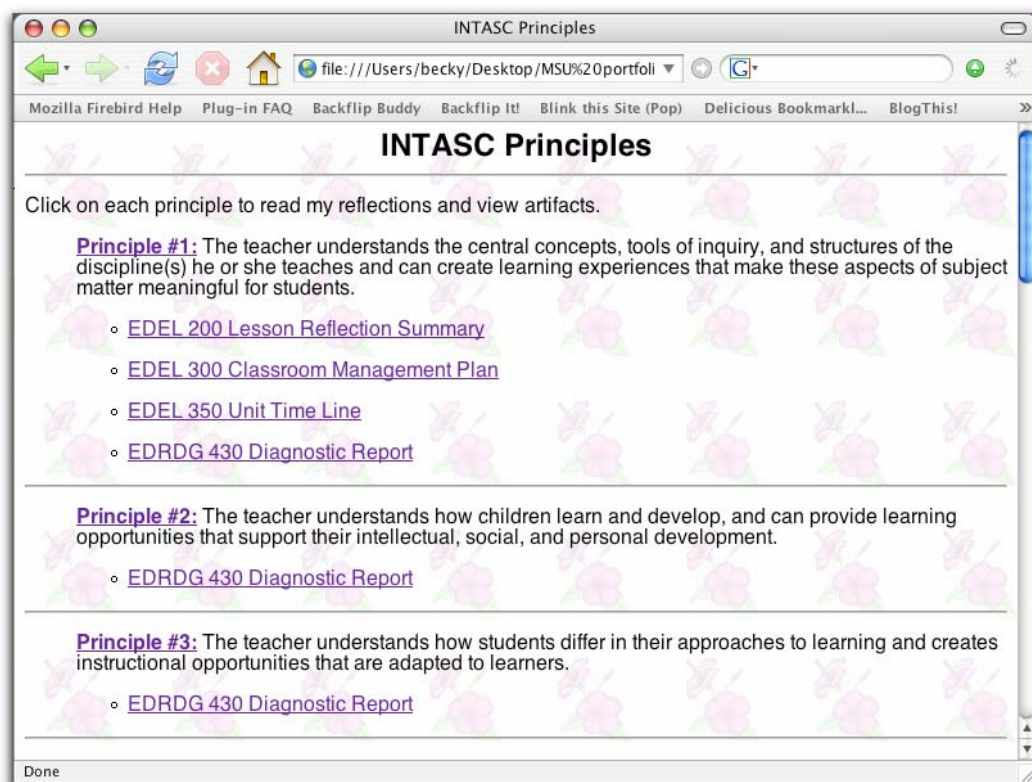


Figure 42. Amanda modifies the INTASC principles page from MSU's template with her background and color scheme.

Amanda has a lot of variety in her artifacts. Some are primarily text, (See Figure 43.)

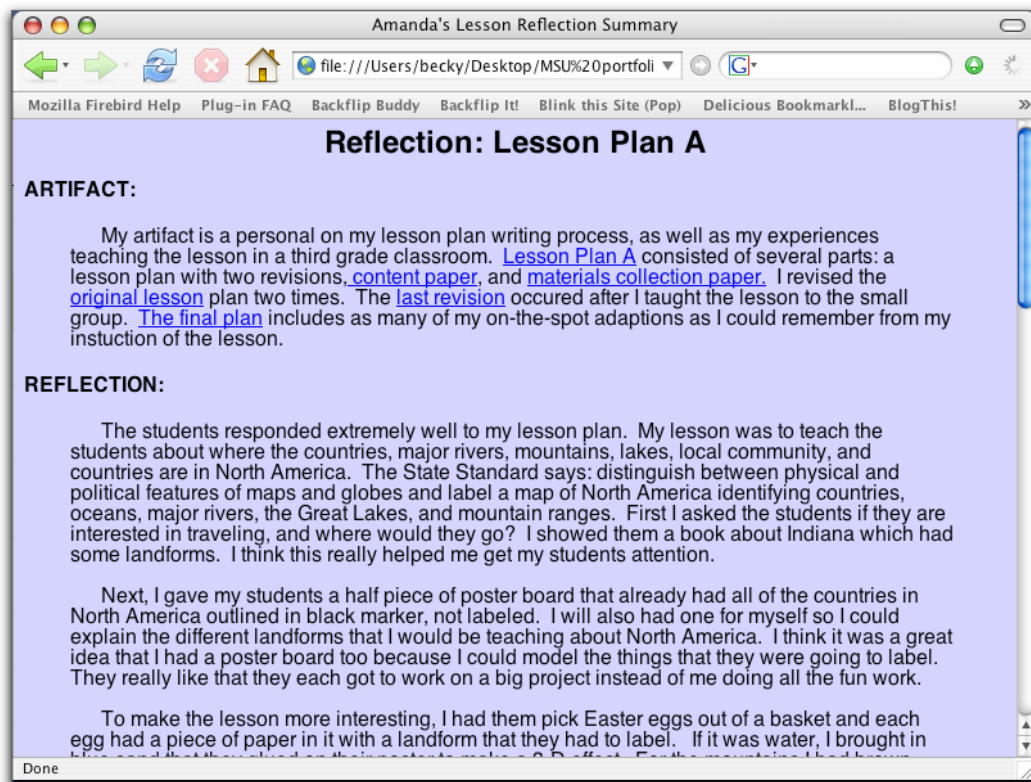


Figure 43. Some of Amanda's artifacts are primarily text.

while others are more visual. See Figure 44.

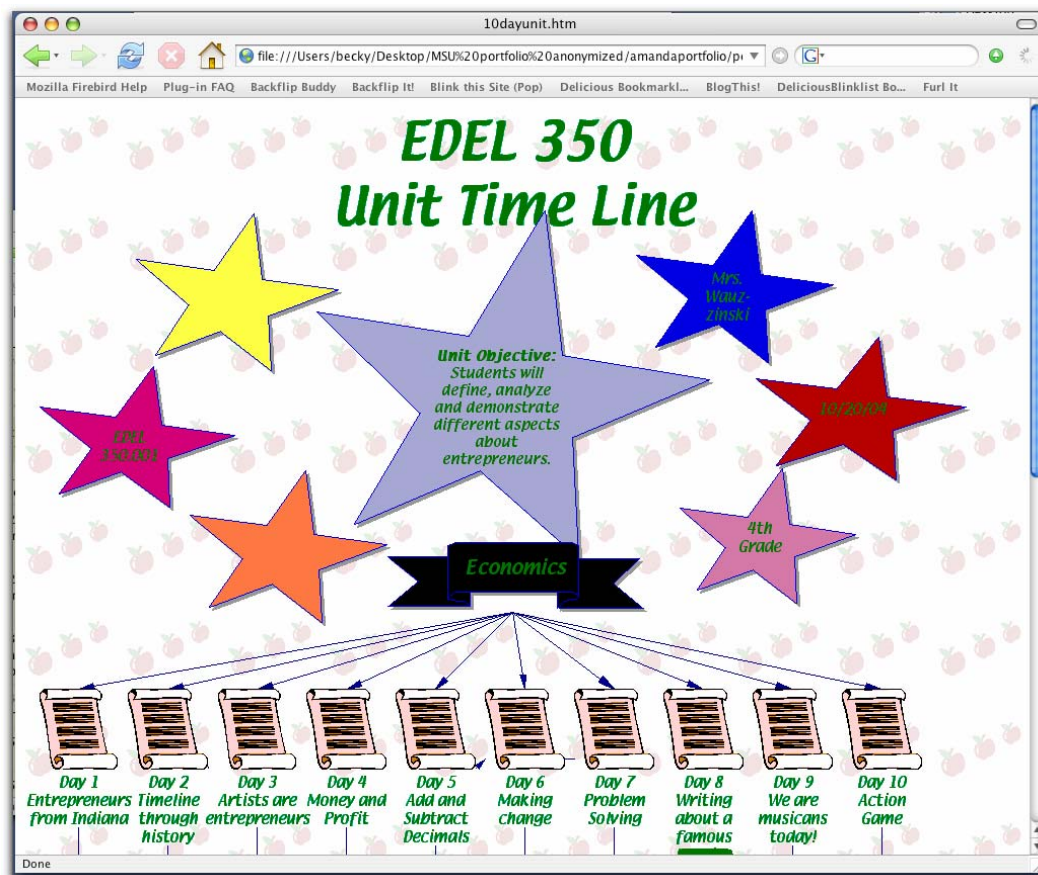


Figure 44. Some of Amanda's artifacts use graphics.

In principle 6, she included a movie she created near the end of student teaching. I can not show the movie because it is much too difficult to make anonymous. However, I can tell you she used photos of the students engaged in a variety of in-class activities planned during her student teaching. There are pictures of the students using laptops in class; on the playground swings; counting change, on a field trip; running an egg drop experiment; and listening to a guest speaker. The pictures were accompanied by beautiful music with interesting visual transitions. See Figure 45.

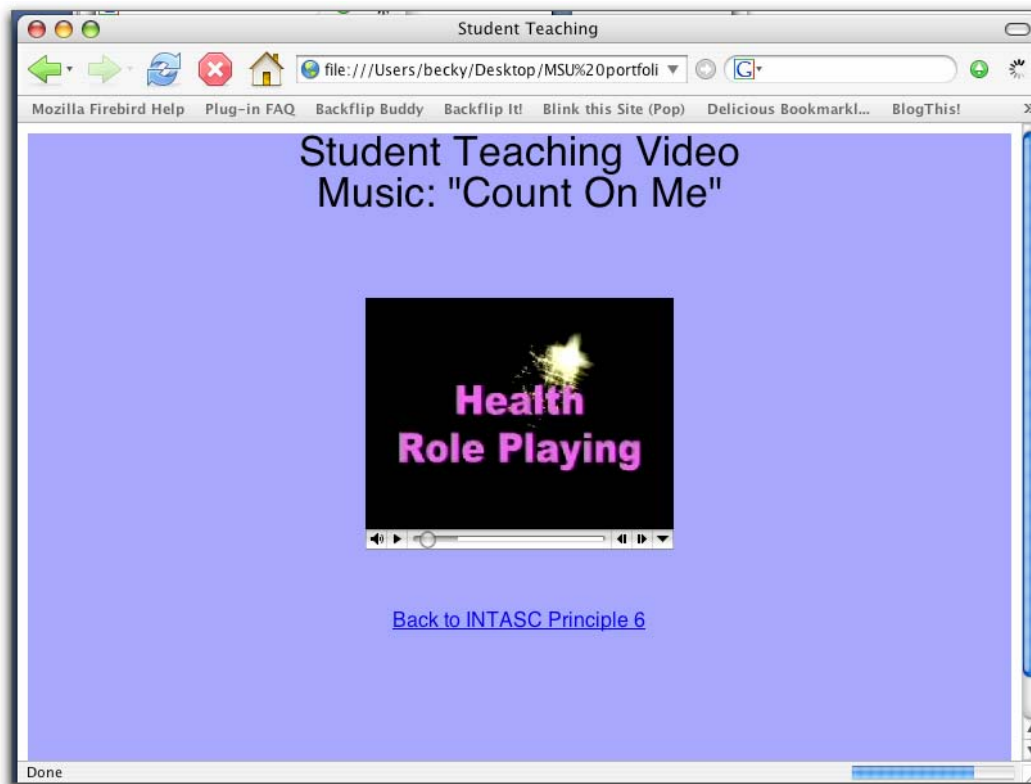


Figure 45. One of Carol's artifacts is a movie she created near the end of student teaching.

Some of the programs of study do not provide templates for students to use for their portfolios. Many of those students developed portfolios very similar to those of their peers operating from the template already seen. However, there were notable exceptions. Bob's portfolio is one of those exceptions. He is a secondary education Social Studies teacher who visited the portfolio support lab over the summer. His primary goal for that visit was to make his portfolio look more professional. Michael—the main portfolio assistant—helped develop his portfolio.

Bob's title page has three different, but complementary textured backgrounds—in addition to a graphic. (See Figure 46.) He and Michael worked to set up hyperlinks that do not have underlining.

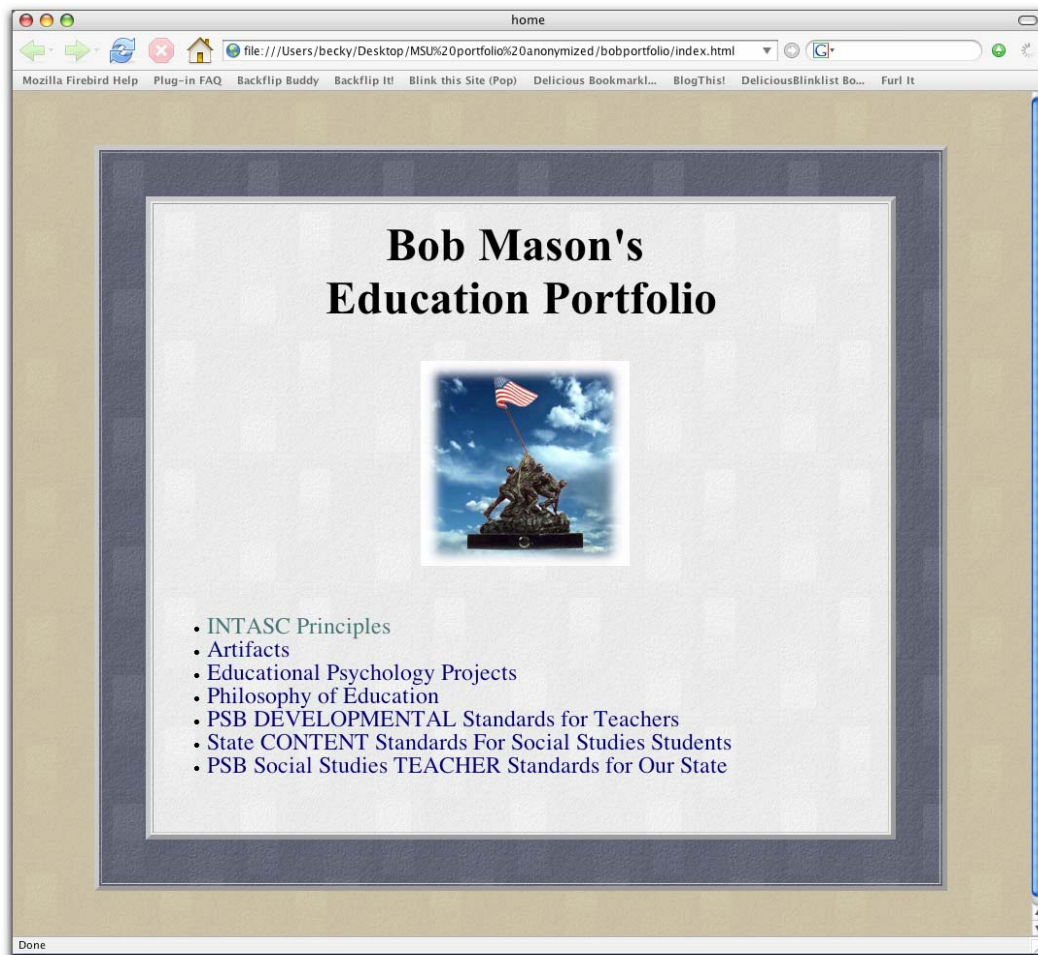


Figure 46. Bob's home page was not based on MSU's template.

Bob wanted the title page to be the most visually complex, so he developed a less elaborate format for his INTASC standards page, each principle page, and the accompanying reflections. (See Figure 47.)

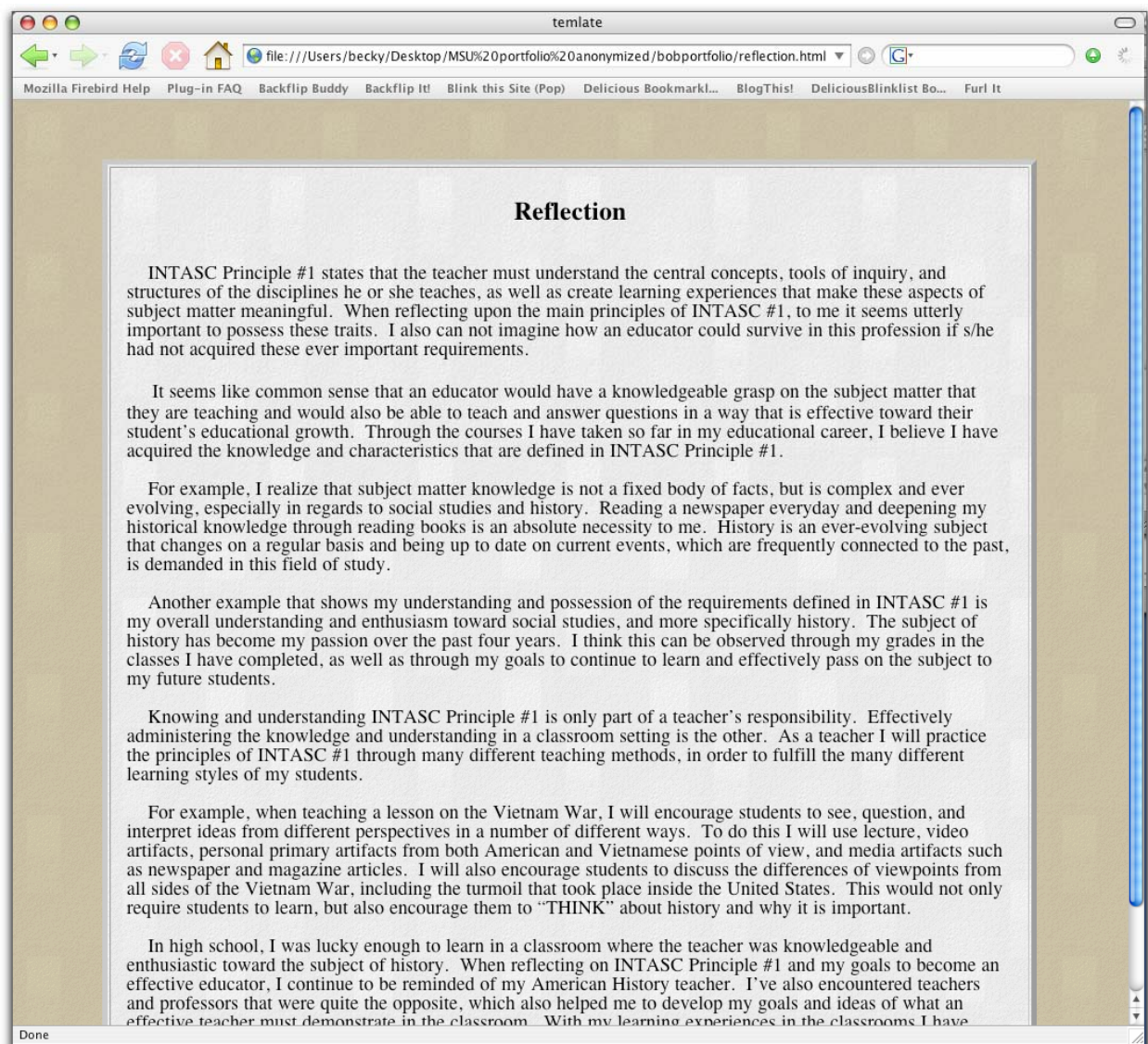


Figure 47. Bob developed an alternate layout for the pages in his portfolio.

Adah's portfolio is another unique example. She is an art education major and used her artistic skills to create this home page. Hers is a work in progress, but so far, she is limiting herself to a black and white color screen. See Figure 48.

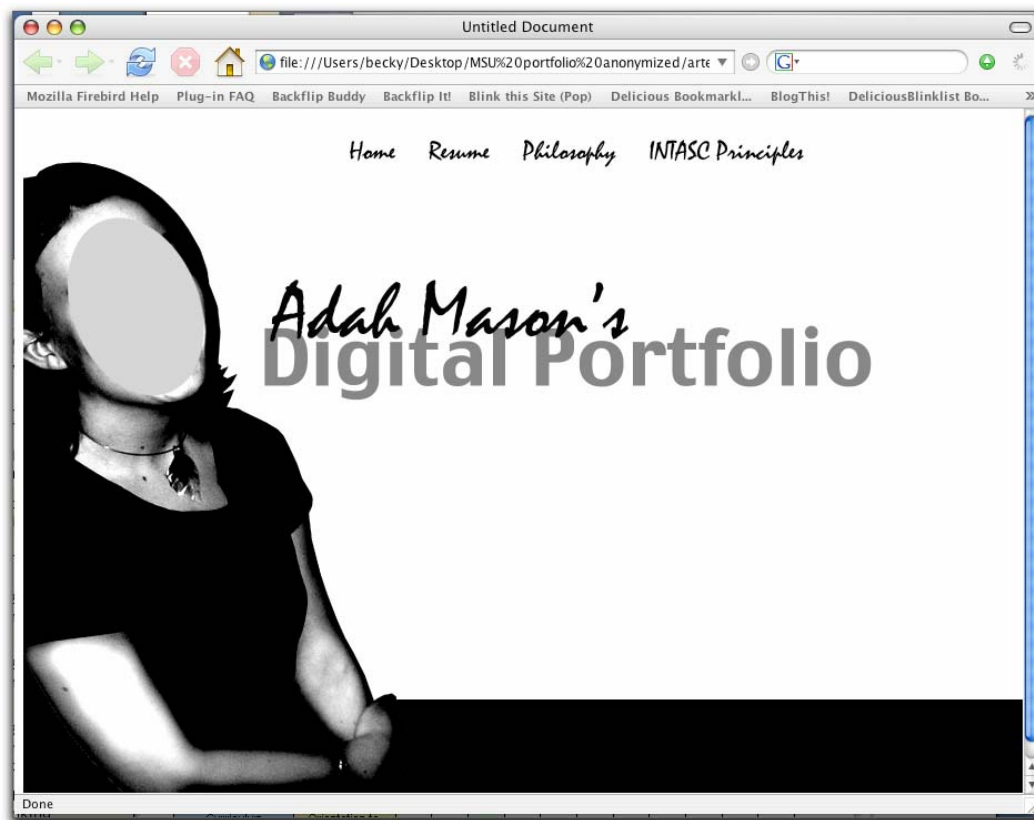


Figure 48. Adah uses black and white photography for her home page.

Notice her graphic on the INTASC principles page. (See Figure 49.)

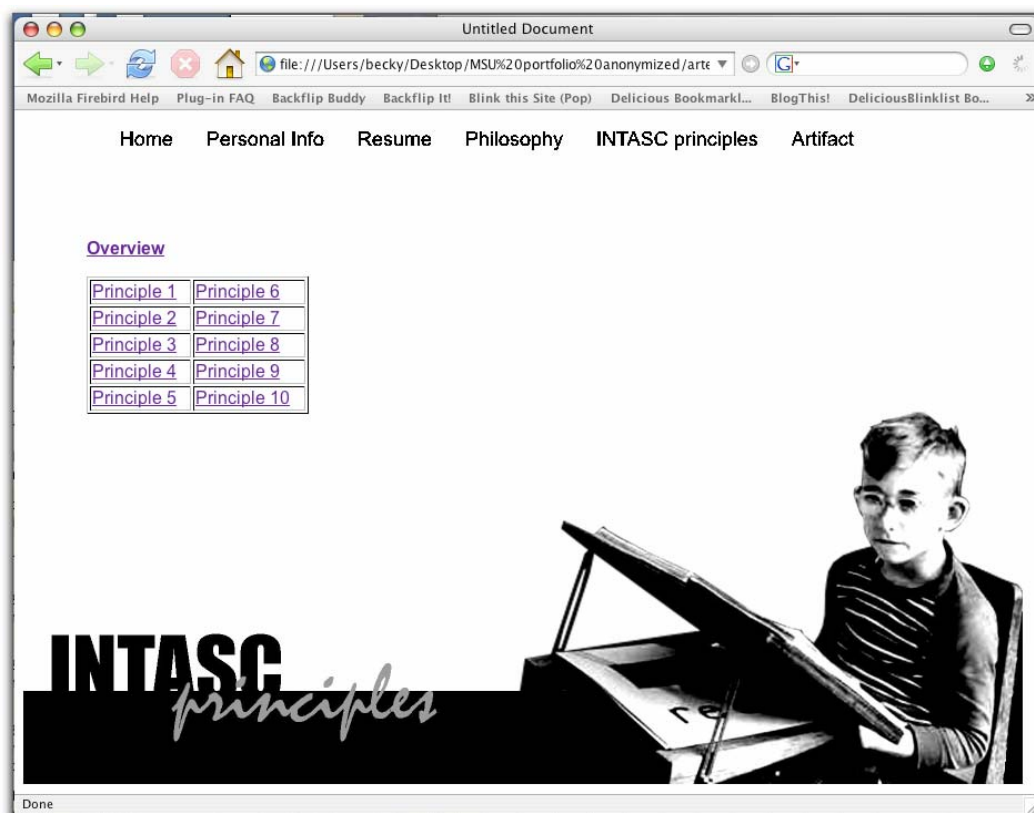


Figure 49. Adah uses another black and white photo for her INTASC principles page.

My intent in this demonstration was to provide a broad overview showing a range of portfolios created with the tools used in this institution. Through these examples I hope to have given an understanding of the variety of digital portfolios students at Mason State create.

APPENDIX J: TRANSCRIPT OF VBC PORTFOLIOS MOVIE

Portfolios at VendorBuilt College are organized around Florida Educator Accomplished Practices. By the end of their program, a pre-service teacher will have added the following items to the graduation portfolio: one artifact for each standard, a copy of the completed rubric for that artifact, and a reflection on the artifact that addresses 3 or more of the pre-service indicators.

Students begin with a template provided by their institution. Using it, students become familiar with the requirements, as well as tips and tricks for completing each page. Each student is required to include 12 artifacts: eight are specified by the department and four are self-selected. Many of the required artifacts are papers students created in class. Typically, students attach these papers as Word Processing files as Phoebe has done here. (See Figure 50.)

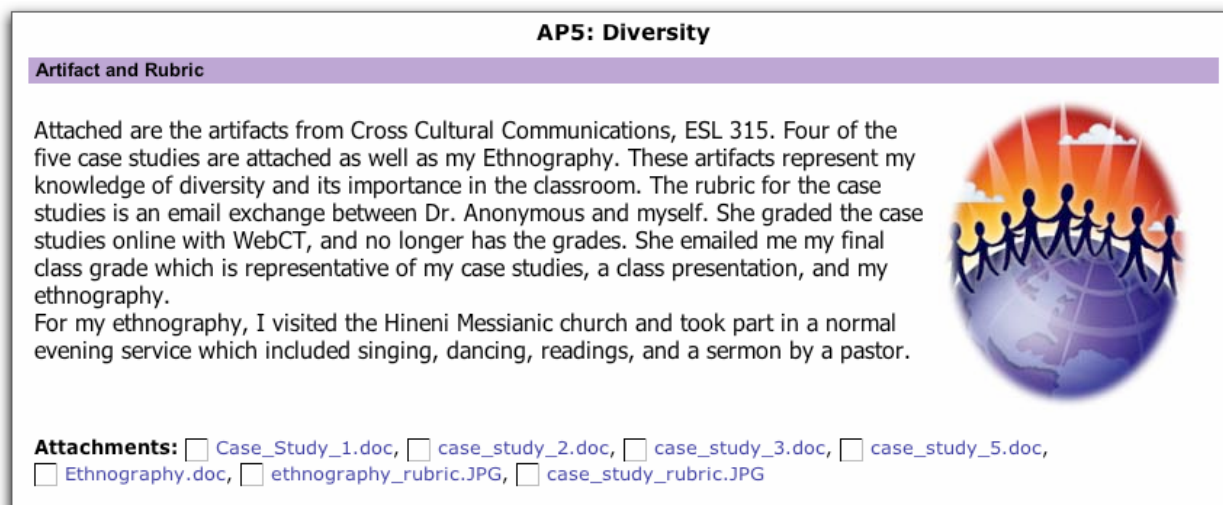


Figure 50. Phoebe adds papers to her portfolio as attachments.

Sometimes, students put the content on display as Phoebe did for this accomplished practice. *Note: The video demonstrates a long web page displaying one of Phoebe's papers.*

Let's look at Astra's portfolio for a bit. For each required artifact, students must also include their graded rubric.

Sometimes students have this clearly on display as Astra has here.

Often students attach those rubrics as documents that must be opened as Astra has done for her Continuous Improvement artifact.

Let's take a look at Cathy's portfolio to see how she did her Reflections. For each artifact students must also include a reflection. In their reflection, they are required to address the pre-service indicators—using the language of the pre-service indicators. This language should be highlighted in some way. Notice that Cathy has integrated the language of these indicators into her own writing. (See Figure 51.)

Reflection Statement
<p>I learned a lot of valuable information from creating a unit plan and constructing a test for this project. The focus of the unit was the geologic history of earth for seventh grade students. While I did not choose this subject, I learned a great deal about a topic I did not know about before.</p> <p>While creating this project, I employed several techniques that aided in a more fairly and validly constructed test. Each standard addressed in my unit plan was adequately represented in the test construction and the test blueprint is evidence of such representation. Due to the varied nature of the the test questions, I feel my test addressed the individual learning needs of students. Each different type of question addressed the different learning styles that might be present in my classroom. I also addressed the needs of my students in the variation of learning objectives that I created.</p> <p>Although I did not administer this test to a group of students, I feel that the test employed traditional assessment strategies, while the various projects assigned throughout the unit employed alternative assessments to determine student mastery. The traditional assessment was the standard test and the alternative assessments were the projects that I assigned the students throughout the unit. My unit plan also addresses students of diverse academic abilities and linguistic backgrounds by offering accommodations for ESOL and ESE students. I offered accommodations to ESOL students by suggesting an interpreter administer the test and that the test be translated into the child's native language as well. Writing this test taught me the importance of evaluating students at all levels of Bloom's taxonomy, so that mastery of content can be achieved.</p> <p>Creating this test gave me a valuable opportunity to explore the necessary steps of writing a quality unit plan and following it through to a well-written, fair, and valid test that properly assesses the students mastery of content. While it was a difficult project to complete, I felt that it will be beneficial to my future as a teacher. I wish that all teachers were required to take a course like this, because I found that several of the techniques that should be employed when creating a test are not evident in most of today's classroom tests.</p>

Figure 51. Cathy integrates language from pre-service indicators into her reflective writing.

Anne and a number of her peers chose a different approach. Anne selected three pre-service indicators and responded to each individually. She also explicitly used some of the writing prompts from VendorBuilt's template and responded to them. (See Figure 52.)

The image shows a screenshot of a reflection form with several sections highlighted in yellow and orange. The sections and their corresponding responses are as follows:

- Encourages students in a positive and supportive manner:**
Incorporating and involving the student in his own IEP and ITP meetings increases the ownership that the child assumes for his learning. In addition, the time taken to listen to opinions and interests of the child increases the student's motivation to learn. In the future, I wish to include the child in the development of both plans in order to increase the effectiveness of the plans and my accountability.
- Provides opportunities for students to receive constructive feedback on individual work and behavior:**
Each IEP and ITP contains progress goals and checklists to maintain organization and to acknowledge when a student has mastered his/her short term and long term goals. Aside from this documentation, a separate evaluation of the completion of each goal could be kept by the student depending on his/her ability level. In my ESE classroom, progress meetings will be held between the students and the guardians of the students to communicate the needs for adaptations and successes of the student.
- My Own Thoughts:**
What have you learned from doing this?
I have acknowledged the importance of accountability in my teaching practices, as required by law and good practice. Records and assessments are imperative to document student progress and to acknowledge what teaching and learning practices work or do not work. Communication is the key factor to the success of a student's IEP and ITP because they provide the funding for programs and are measures of accountability for the student's achievement.
- What can you apply from the completion of this artifact that may help you in future teaching situations?**
As a future ESE teacher, my level of comfort in creating and continually documenting progress of a student via an IEP and ITP has increased with my fluency with the plan formats. In addition, I am able to understand the language and jargons associated with both plans and translate the plans in colloquial format for those involved in the child's life who may not be fluent in the workings of the IEP and ITP. As

Figure 52. Anne responds to pre-service indicators and writing prompts in her reflections.

The final piece for each artifact is a list of standards. These standards were selected by faculty and are included at the bottom of each page.

Students at VendorBuilt must comply with some very specific requirements. The tool they use imposes some similarities across the different work products. However, it is important to point out how the students have inserted creativity in their work.

Phoebe prefers to use photos of herself interacting with students rather than clipart. Here is a photo in her introduction, Assessment, and Ethics sections. (See Figure 53.)



Figure 53. Phoebe added pictures of her interacting with students to her portfolio.

Tucker is an art education major. The images in his portfolio were among the last things added. He told me he planned to use a lot of his own work for the images. [See Figure 52 for just one example from the video.









Artifact and Rubric			
plan.	Fuller	Jenk.	Smit.
			
			
			

Figure 54. An example graphic from Tucker's portfolio.

Mallory is an Elementary Education major, but used her artistic talents throughout her portfolio. For example, she applied her own color scheme to the matrix of artifacts. For her first communication artifact, she used a caption to announce the drawing was her own.

The artifact I believe Mallory is most proud is a children's book she wrote and illustrated. She was not required to include this artifact, but chose to add it because of its intrinsic importance. It was one of two extra artifacts Mallory included. Notice in the navigation bar that these additions generated extra tabs. To include her book, Mallory scanned each page and placed the scanned image in a page section. Each green bar represents a new section. Remember these bars that serve as dividers because these will come up again. See Figure 55.

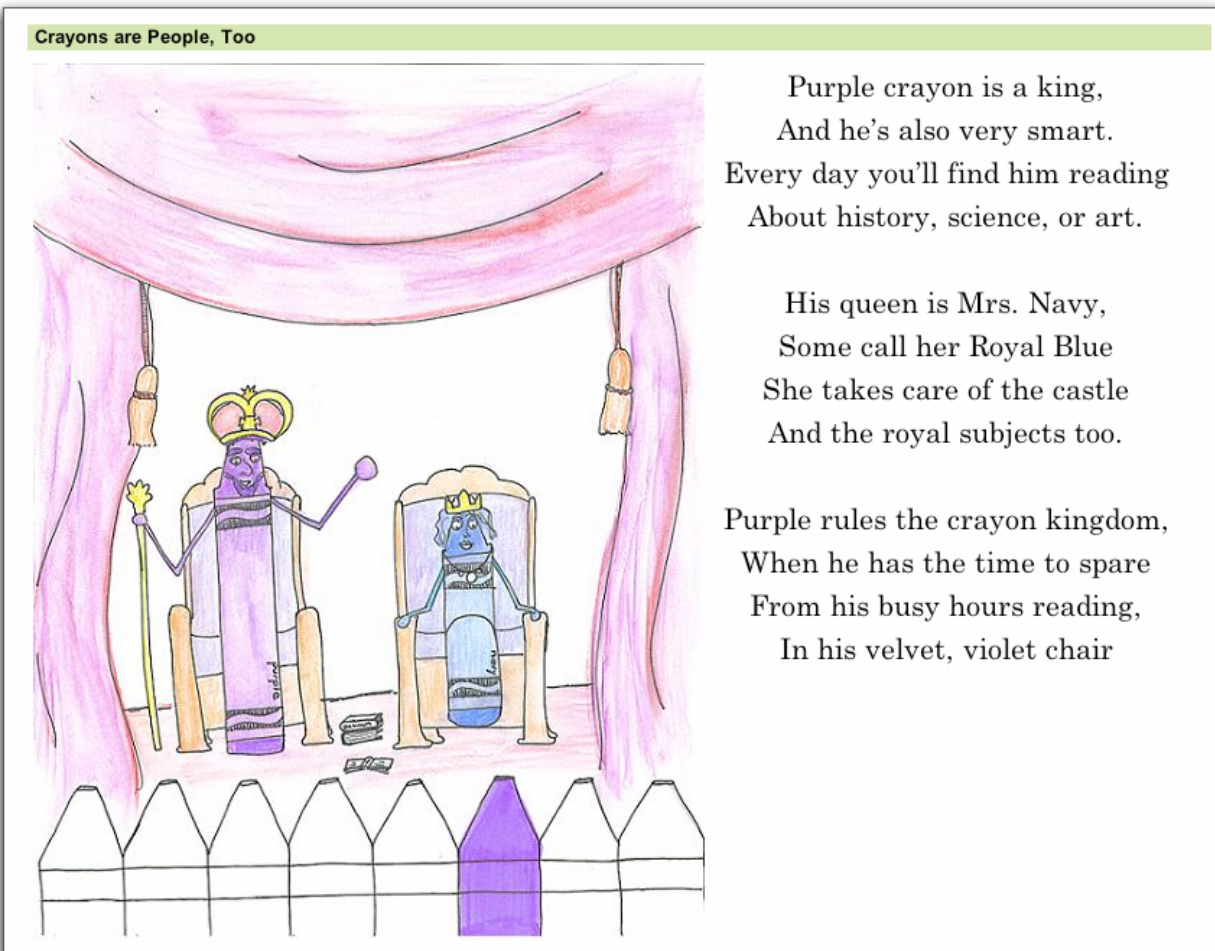


Figure 55. One page from a children's book VBC's Mallory wrote and illustrated.

Let's return to Anne's portfolio. She showcases her creativity by displaying her "Tyke on Tryke" artwork and a writing sample. She explains the importance of cycling in her life (notice the picture of her on her bike) and tells us that she sketched this tyke for her courier bag. See Figure 56.



Figure 56. Anne includes her own artwork in her portfolio.

Anne also used her ingenuity in ways a casual observer might not notice. Anne had very definite ideas about how she wanted to represent her field experiences. Recall the bar dividing each section of Mallory's page for her children's book? Anne did *not* want that bar and used a combination of technical skills and Internet services to work around the technology constraint limiting her display to only one image per section. The end result is a page that looks exactly as Anne intended it with half a dozen images in a single section. How she accomplished this feat is a discussion for another section.

Note: The video demonstrates a very long page that alternates between a paragraph of text describing a practicum and a scanned copy of her practicum evaluation form. There are 7 instances of this alternation in her portfolio.

My intent in this demonstration was to provide a broad overview showing the range of portfolios that are created with the vendor-supplied tool used in this institution. Through these examples I hope you understand the range of digital portfolios students at VendorBuilt College create.

**APPENDIX K: TRANSCRIPT OF CLASSROOM
MANAGEMENT PLAN TEMPLATE MOVIE**

This is Angela's Classroom Management Plan. Its original form was on paper but she moved it into this *CommercialFolio* Project. She turned her decorative cover into an image that she included at the top of this page. She also scanned her table of contents and included her personal Philosophy of Education on this first page. See Figure 57.

Ms. Vendor's Classroom Management Plan

by Rebecca Fiedler

[show properties](#)

Personal Philosophy of Classroom Management

Overview of Classroom Management Plan

Classroom Management Plan

This is a classroom management plan created by a team of teachers for the fourth grade. The teachers collaborated on the management plan as to make everything as standard as possible across the entire grade level. Staff and faculty are held to the same standards and expectations set forth in this management plan for the students.

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Figure 57. Angela's Classroom Management Plan.

On her next tab, she describes how she would like to arrange her classroom. She hopes for wireless Internet access and several learning centers. She also includes a floor plan showing

where she would like to place her *SmartBoard*, projector, reading area, and other centers. Notice the class garden, complete with bird bath and feeders outside her door. See Figure 58.

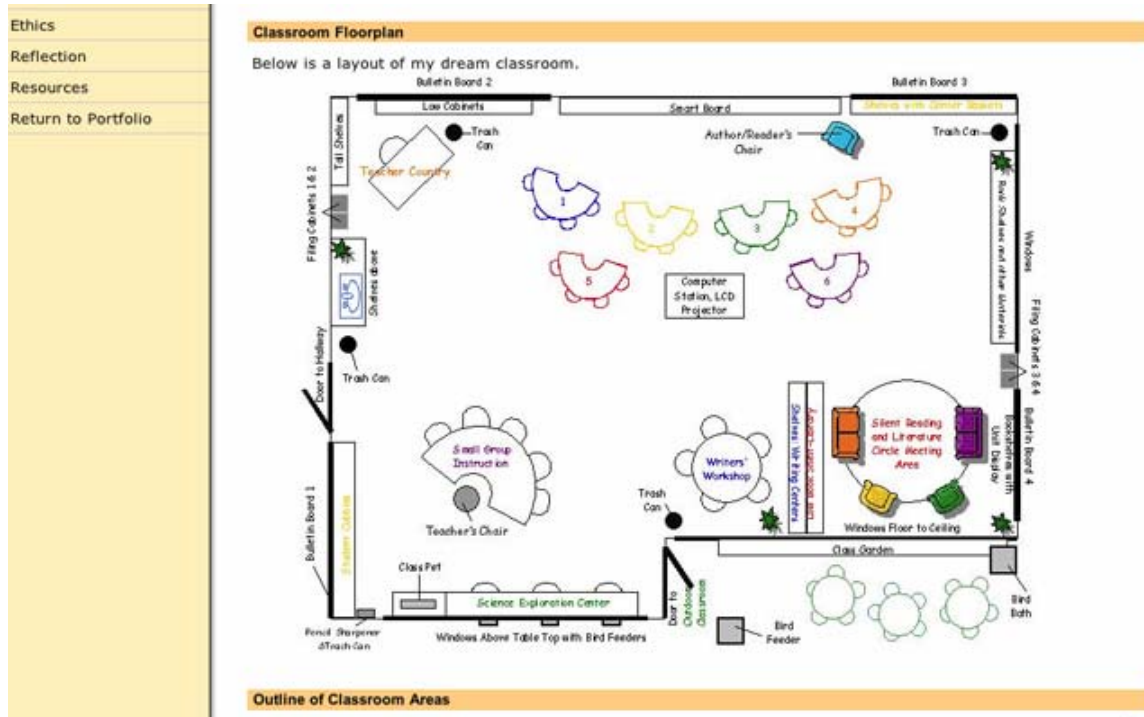


Figure 58. Room arrangement from Angela's Classroom Management Plan.

In her first days of school section, Angela shares a copy of a letter she would like to send to parents and another one for students. See Figure 59. She also includes details about arrival and departure procedures, substitute teachers, classroom jobs, and ideas on how she will accommodate students with disabilities.

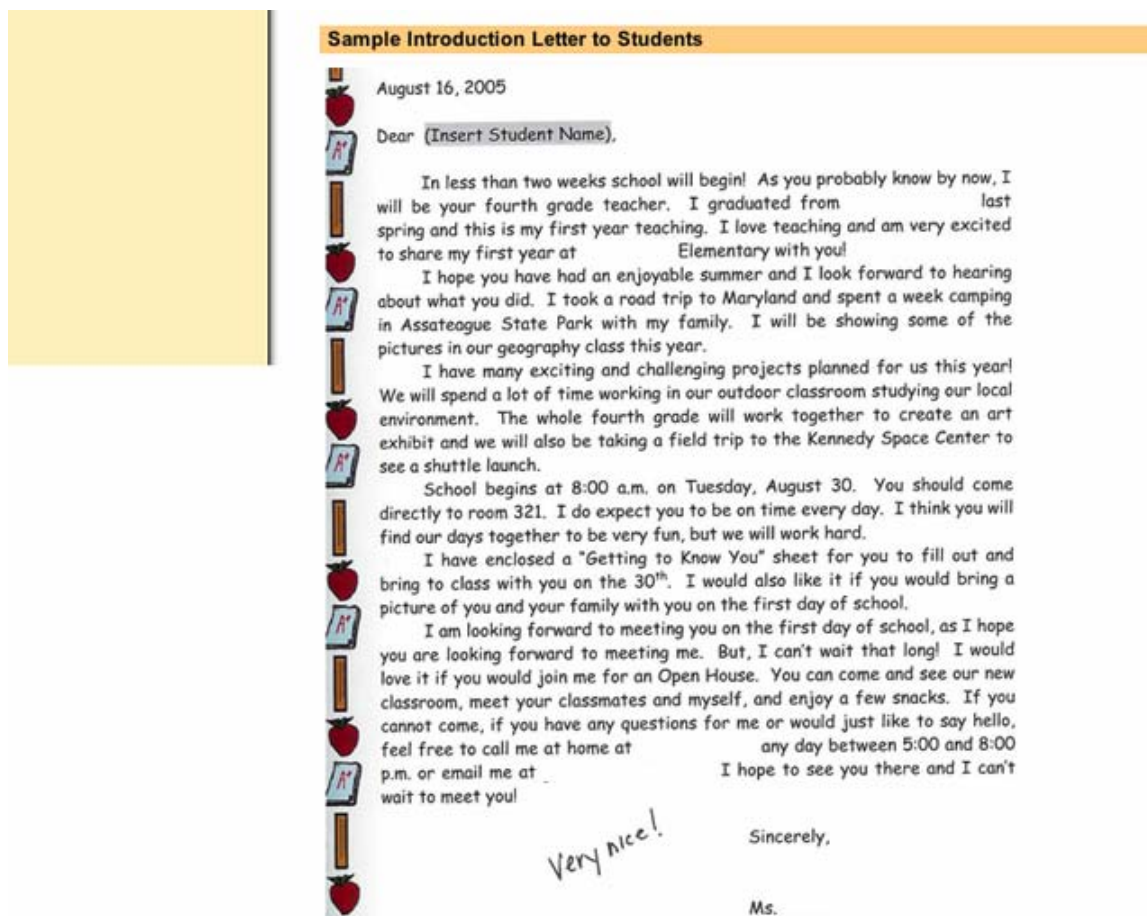


Figure 59. Sample letter to students from Angela's Classroom Management Plan.

She includes a similar level of detail for her Code of Conduct, Classroom Procedures, Management of Student Work, and plans for strengthening core values and class character.

Angela does not end there. She shares her thoughts about planning (both long and short-range) and thoughts on types of instruction. She provides details on how she plans to manage cooperative learning groups and maintain appropriate student behavior.

In her communication section, she talks about communication in her classroom, plans to communicate with parents and guardians, and her students.

Angela also prepared a section on Ethics where she relates her philosophy and plans to an awareness of professional ethics.

Finally, she includes a reflection on this project and identifies the resources from which she drew to prepare it.

Angela's Classroom Management Plan received a lot of attention from her peers. In fact, she created a template based on her plan and shared it with them. The template is structured around the grading rubric for the project. There is a page for each component of the project. In creating her template, she reproduced the text description from the rubric and added bits of advice she gleaned from her notes. See Figure 60.

VBC Shared Classroom Management Plan Template
by Rebecca Fiedler [show properties](#)

Personal Philosophy of Classroom Management	
Personal Philosophy of Classroom Management	Personal Philosophy of Education
Room Arrangement and Organization	Here, discuss your personal beliefs of the classroom. The following questions should help you to focus your discussion.
First Days of School	What is the purpose of education? What is a good teacher? What would you consider good teaching? What role will you as the teacher play in the classroom? Discuss your own personal strengths and weaknesses that would effect you in the classroom.
Rules, Procedures, Expectations and the Management of Student Work	What kind of behaviors do you want your students to avoid? What kind of misbehaviors do you feel are worth addressing? How will you address diversity? What kind of instruction techniques would you prefer to use? Do you believe that it is more effective to impose discipline or to teach self-discipline?
Strengthening Core Values and Class Character	
Planning and Conducting Instruction	
Managing Cooperative Learning Groups	
Special Groups	
Maintaining Appropriate Student Behavior	
Communication Skills for Teaching	

Figure 60. Page from Classroom Management Plan Angela created.

For some of the plan components, Angela offered the page structure she used in her own project. See Figure 61.

VBC Shared Classroom Management Plan Template <i>by Rebecca Fiedler</i>		show properties
Personal Philosophy of Classroom Management	First Days of School	
Room Arrangement and Organization	First Day Preparations	
First Days of School	As you all know, the first days of the school year can be a huge adjustment for you and the students. Discuss how you would make the first few days of school an easy transition back. What kinds of activities would you do to get to know the students? What would you focus on those first days (rules and procedures, assessments)?	
Rules, Procedures, Expectations and the Management of Student Work	Introduction Letter	
Strengthening Core Values and Class Character	In this section write an introduction letter to the parents. Some things that are helpful to discuss are: General contact information. Some of the major units you will be covering in that year. The major rules and procedures for the class. Any homework policies you will have in place. Ways the parents can get involved. A general introduction of who you are.	
Planning and Conducting Instruction	Here is something to think about before writing your letter. What kind of note would you want to receive from a teacher if you were the parents? It's always a good idea to put yourself in the parents' shoes.	
Managing Cooperative Learning Groups	Arrival and Departure Procedures	
Special Groups	In this section explain how you would have the students arrive and depart each day. When the students come in what will they be doing? What will you be doing as the students are arriving and completing work? Also, explain how you will dismiss the students at the end of the day as well as for special times of the day such as recess, lunch, specials, assemblies, etc.	
Maintaining Appropriate Student Behavior		
Communication Skills for Teaching		

Figure 61. Angela suggests page structure in the classroom management template she made.

Here and there, Angela offers production advice to her peers. For example, she suggests options to produce the floor plan including *Word*, *Publisher*, and *Print Master*. She even reminds other students they can draw an image to scan.

Through each section, Angela poses questions for template users to consider as they work on the various sections of the project.

Angela shared this template with her professor and with students in her class. They, in turn, have passed it on to younger students—and curious researchers—with Angela's blessings.

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