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Perceptions of Nebraska School Leaders Toward the Use of Digital Portfolios in the
Teacher Selection Process

By

Paul A. Clark

A DISSERTATION

Presented to the Faculty of

The Graduate College at the University of Nebraska

In Partial Fulfillment of Requirements

For the Degree of Doctor of Education

Major: Educational Administration

Under the Supervision of Dr. Jack McKay

Omaha, Nebraska

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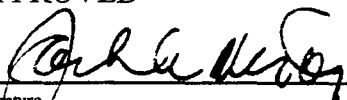
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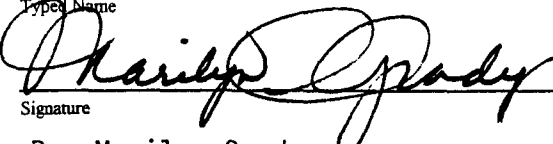
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PERCEPTIONS OF NEBRASKA SCHOOL LEADERS TOWARD THE USE OF
DIGITAL PORTFOLIOS IN THE TEACHER SELECTION PROCESS

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University of Nebraska, 2003

Advisor: Dr. Jack McKay

Digital portfolios offer the promise of a rich, multimedia portrait of a teacher's ability to teach while at the same time offering the promise of easy access for the administrator making hiring decisions. The use of digital portfolios is an emerging trend in higher education. Many colleges are requiring teacher candidates to develop digital portfolios. One probable use is for the screening of potential teachers in the hiring process. Finding and appointing the best possible teacher for a vacant teaching position is one of the most important decisions a school administrator will make and can have extensive consequences for students, faculty and the institution (Wise, Darling-Hammond, & Barnett, 1987).

The purpose of this study was to examine Nebraska School administrators' perceptions of digital portfolios in the teacher selection process. The digital portfolio can become another tool that school administrators use to help with the teacher selection process. Before universities or individual students spend a great deal of time and resources in creating and developing a digital portfolio plan, it is important to study the perceptions of the school administrators who may be using the digital portfolio in the teacher selection process. It is important to note whether they perceive a digital portfolio

as useful and, if so, what contents of a digital portfolio do they feel are important in making a valid and reliable judgment about the teacher's abilities to teach.

Data were gathered and analyzed through a web-based online survey. One hundred eighty eight Nebraska school administrators participating in the 2002-03 Technology Talks Leadership Academy completed the survey. Data was analyzed using descriptive statistics, t-tests and multiple regressions.

The results of this study can provide information about Nebraska school administrators' perceptions toward the use of the digital portfolio in the teacher selection process. This information can provide guidance to colleges that are creating and implementing a digital portfolio process.

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Chapter 1

Introduction

As there is an increased demand for effectively assessing student performance in K-12 education, a greater emphasis is being placed on effective teaching practices. It is clear that quality teaching matters in student achievement (Howard & McColskey, 2001). Teaching methods and strategies are in a constant state of change as new research leads to further refinement of present practices. Consequently, a vast array of teaching strategies becomes available to teachers for use in their teaching. With this in mind, it makes sense to select the most qualified teacher for the job, one that already possesses a wide variety of skills and tools. One method of assessing quality teaching that has been getting a great deal of academic attention recently is the use of digital teaching portfolios (Curry, 2000; Darling-Hammond, 1998; Ediger, 2000; Meadows & Dyal, 1999; Sullivan & Glanz, 2000).

Portfolios currently are a popular topic in education (Curry, 2000; Lyons, 1999; Riggs & Sandlin, 2000; Wolf, 1996). Traditionally, portfolios have been collections of paper artifacts consisting of examples of student work and were used to provide a more accurate portrayal of the student's academic ability or achievement. Portfolios have also been used to assess a teacher's ability to teach (Curry, 2000; Darling-Hammond, 1998). There is some evidence that school administrators show a propensity to use traditional portfolios to screen teacher candidates in the selection process (Bouas & Bush, 1994; Newman, Smolen, & Newman, 1993).

Within the past two years digital portfolios have been touted as a useful tool for assessing teaching skills (Barrett, 2000). Digital portfolios offer the promise of a rich, multimedia-based portrait of a teacher's ability to teach while at the same time offering the promise of easy access for the administrator making hiring decisions. While the potential of digital portfolios in assessing teaching skills has been discussed in higher education during the last decade (Farmer, 1997; Milone Jr., 1995; Naguidula, 1997; Oros, Morgenegg, & Finger, 1998; Pulliam & Weitman, 1996/97), to date there have been no studies examining how administrators who are responsible for selecting and hiring qualified teachers might feel about the use of digital portfolios in that process. This dissertation study investigated principals' perceptions of digital portfolios as a tool for teacher selection.

Statement of the Problem

Given the excessive time demands on principals' time (Freston, 1998; Friedman, 1995; Jones, 1999; Laws, 1990) and the relatively low level of reported principal technical expertise (Hope, 1999; Schoeny, 1999), one has to wonder if the digital portfolio will be a practical tool for screening perspective teachers with respect to selection. This question served as a guide for this dissertation study.

Research Questions

1. Do Nebraska administrators perceive digital portfolios as useful in the teacher selection process?
2. Do elementary and secondary administrators differ in their perceptions of which components of a digital portfolio are useful?

3. Is there a difference between elementary and secondary administrators and in their willingness to use digital portfolios in the teacher selection process?
4. Is there a relationship between the comfort level of administrators using technology and their willingness to use technology?
5. What do Nebraska school administrators perceive as major barriers to the use of digital portfolios for teacher screening or hiring?
6. Which types of evidence in a digital portfolio do Nebraska school administrators perceive as useful in the hiring process?
7. What are the backgrounds of administrators who report a willingness to use digital portfolios to guide their hiring practices?

Sample

The sample population for this study was a group of 290 Nebraska school administrators participating in the 2002-2003 Leadership Talks Technology Academy, LLTA. The purpose of the Academy is to train Nebraska school administrators to use technology more effectively.

This group was chosen for several reasons. First, the nature of the technology training that this group underwent was conducive to the study. Second, this LLTA group was a convenient group to survey. Finally, the LLTA group was selected by the administrative staff of the Nebraska Department of Education and was representative of school districts from across Nebraska. Since participation in the LLTA program was

voluntary, one can assume that the group was interested in the use of technology in school administration.

Instrument

The questionnaire/survey method was the design used in this study. This survey was a cross-sectional web-based survey of Nebraska school administrators. The questionnaire/survey method allows for the collection of preliminary data that can then be generalized to the entire population of school administrators in Nebraska (Creswell, 1994).

The first objective of the survey was to collect personal attribute data about each respondent. Personal demographic data about the respondent's tenure in teaching and administration was collected; the type of administrative position he or she serve in; as well as data about gender. General demographic data was also collected about individual settings in which the administrators work. Questions from Dr. Brenda Loyd and Dr. Clarice Gressard's Computer Attitude Scale (Loyd & Gressard, 1984) followed this in order to obtain a general attitude toward computer technology from the LTTA participants. The next section of the survey contained questions pertaining to the use of digital portfolios for teacher selection. The survey was web-based and contained three types of answering mechanisms. There were yes/no answers in radio button format, a four point Likert-type scale using radio button with four choices, and pull-down menus to select from a pre-set range of options. The Likert type scale ranged from 4 to 1 with 1 equaling strongly agree, 4 equaling strongly disagree and no delineations made for 3 or 2.

Potential Significance of the Study

Significance for Practice

The use of digital portfolios is an emerging trend in higher education. Many colleges are considering requiring teacher candidates to develop digital portfolios. While the primary purpose of a portfolio is to foster reflection in the portfolio's creator, the nature of a digital portfolio allows for multiple audiences to access and employ its contents. One probable use is for the screening of potential teachers in the hiring process. At this point there are no studies examining how administrators perceive the use of these digital portfolios, what they know about them, nor about what those administrators who would demonstrate a willingness or ability to use digital to screen teacher applicants might feel would be important to include in a digital portfolio. This study examined these areas to provide guidance to colleges or in-service teachers wishing to create a digital portfolio to be used in finding a teaching position.

Significance for Research

A search of the ERIC, First Search, Ebsco and Wilson Omnifile revealed very little research centered on the use of digital portfolios. This apparent void was confirmed through a dialogue with experts in the field of digital portfolios at the SITE conference in Nashville, Tennessee, in April of 2002. Since this is an emerging issue in K-16 education, it is important to be able to obtain preliminary opinions from a sample of representative administrative practitioners in the field. These opinions can help guide further research into the use of digital portfolios in higher education.

Assumptions, Limitations, and Delimitations

This study should be considered exploratory in nature. It studied one group of Nebraska administrators that are currently being trained to use technology more effectively. Participation in the LTTA cadre is voluntary and it can be assumed that the participants have an interest in gaining new skills with technology.

Since the administrators surveyed for this study are all participating in a technology-training cadre, it was assumed that they have some degree of familiarity with technology and have been exposed to the concept of a digital portfolio. It was also assumed that since the LTTA Cadre was surveyed prior to major training and that this was the second set of administrators to be trained by the academy that there would be varying levels of comfort and expertise with technology.

Another limitation was that the survey instrument used in this study was web-based and therefore had the potential to eliminate school administrators that had limited knowledge of using a web-browser. The survey was also based on self-perception that may result in biased answers. Voluntary participation in the survey may have led to decreased participation. Finally, the survey used relied primarily on closed-response questions with limited opportunity open-ended responses.

Chapter 2

Review of Literature

Introduction

Teaching portfolios have gained a great deal of attention recently at all levels of education. A search of the Google search engine (<http://www.google.com>) in August of 2002 found about 494,000 web sites with the exact phrase “teaching portfolio.” A similar search at Yahoo (<http://www.yahoo.com>) returned about 353,000 web pages. Many of these websites contained anecdotal information about how to build a teaching portfolio or had lists of suggested portfolio contents. Nearly fifty percent of the first 100 sites returned in the Google search were college of education websites that gave students directions for building their teaching portfolios. This is a strong indication that many colleges of education are requiring pre-service teachers to create and maintain digital portfolios. It is reasonable to assume that pre-service teachers who spend a great deal of time creating and perfecting these portfolios will want to use them in their search for a teaching job.

While many of the sites found discussed using digital portfolios in the job search, none of the websites found offered any research into their effectiveness as a marketing tool for teacher candidates. Searches of library electronic databases of scholarly articles such as EBSCO, Eric, Wilson Omnifile and First Search revealed similar results. If digital portfolios are to be used in the marketing and hiring of teachers, it is important to understand school administrators’ perceptions of them. It is valuable to understand what

they know about portfolios, what contents they would find valuable, how they would like to see them presented, and what they feel that they still need to learn about them.

This literature review looks at the current state of the digital teaching portfolio and its evolution. First, it discusses the development of traditional teaching portfolios. This is followed by a review of the contents of traditional portfolios and how they have been used in the teacher selection process. Next is a thorough look at digital teacher portfolios. These sections include a comparison of digital and traditional portfolios. Finally, this literature review examines the use of traditional paper-based portfolios in the teacher selection process.

Traditional Portfolios in Education

A portfolio has been defined as a meaningful collection of work that demonstrates achievement or progress toward a goal (Danielson & Abrutyn, 1997; Stiggins, 1994). Portfolios in education were originally used in classrooms to assess and demonstrate student growth and achievement. Unlike standardized tests that reduce a student's achievement to a number, portfolios are designed to portray a complete picture of the student's learning and development (Naguidula, 1997). Since the student develops his or her own portfolio, he or she fosters a greater sense of ownership and understanding of content (Danielson & Abrutyn, 1997; Wiggins, 1994). Portfolios have been used successfully in K-12 schools to assess student performance since the early 1980s (Herman, 1992). This method of assessment is one that is designed to allow students to first collect and present samples of their work that demonstrate their growth in learning. In traditional paper portfolios the portfolio process is designed to serve the student and

teacher in assessing the student's progress. The traditional storage format for educational portfolios has been paper-based. Stored primarily in manila folders, three-ring notebooks or larger containers, the artifacts are comprised mainly of text and images on paper, although the use of video or audiotape has been emerging (Barrett, 2001).

The Portfolio Process

Just collecting samples of one's work and displaying them does not create a portfolio. There are specific steps through which one must proceed to create a true portfolio. Collecting and presenting work samples creates a scrapbook, not a tool for growth. First, the portfolio creator must collect multiple samples of his or her work. Next, from these collections he or she selects specific examples that will demonstrate growth in learning and specific pre-determined objectives or goals. After a student has selected artifacts that demonstrate his or her ability to perform a task and meet goals or standards he or she reflects on their growth and learning. This step is key in the portfolio development process and allows the creator to become more aware of him or herself. Finally, he or she projects, or presents, the portfolio to a teacher, peer, parent or another group to complete the portfolio process (Airasian, 2000; Danielson & Abrutyn, 1997; Kish & Sheehan, 1997). In this step the portfolio creator typically looks forward and is able to set new goals. In a teacher portfolio, it is at this point that professional development occurs (Barrett, 1999a).

Burke, Fogarty, and Belgrad (1994) propose several other steps in this process. These steps allow a teacher to create a teaching portfolio that demonstrates growth over an extended period of time and creates a portfolio cycle (Table 1).

Table 1 The Portfolio Process

Portfolio Step	Purpose
Project	Set purposes, uses, and audiences
Collect	Collect many samples
Select	Select, prioritize, eliminate and sift through artifacts to find specific artifacts that meet the needs of the portfolio goals
Interject	Add a personal touch, design that reflects the portfolio creator's personality
Reflect	Label each artifact, describe why it has been included, describe the value of each artifact
Inspect	Self-assesses the portfolio, is it meeting the desired goals
Perfect	Make sure that the portfolio is ready for presentation and it is polished
Connect	Share the portfolio
Inject and Eject	Keep the portfolio updated and fresh, add new artifacts and remove those that are outdated
Respect	Formal presentation of the portfolio

Traditional Teaching Portfolios

A teaching portfolio is a description of teaching activities and accomplishments of an educator that showcases what is unique or effective about that individual's approach to teaching (Boody & Montecinos, 1997; Cushman, 1999; Wolf, 1996). Shulman (1998) 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.”

Portfolio Purposes

A teaching portfolio is developed for three primary purposes. A formative or working portfolio is developmental in nature. This portfolio is developed for the teacher as a vehicle to reflect on practice and learning in the professional development process. The primary audience for this type of portfolio is the portfolio's creator. The summative portfolio is developed for assessment purposes. This portfolio is more highly polished and is often presented to an audience for evaluation purposes such as meeting course requirements, teaching performance review or professional certification. A marketing or employment portfolio is composed of the teacher's best work and is developed for the purpose of securing a teaching position (Barrett, 2001; Brown & Kate, 1997; Curry, 2000; Cushman, 1999).

Traditional teaching portfolios have been used in a variety of ways depending on the audience and purpose (Danielson & Abrutyn, 1997; Lankes, 1998). A teaching portfolio can be developed as a professional development tool that fosters reflective thinking, allowing the user to grow professionally and demonstrate progress toward goals (Riggs & Sandlin, 2000). The teaching portfolio can also be used to demonstrate teaching proficiency when addressing standards. The National Board for Professional Teaching Standards (NBPTS) requires teachers to demonstrate proficiency by supplying a portfolio that contains artifacts that meet teaching standards. A showcase portfolio is developed to present the teacher's best work and is often developed for peer review purposes. An employment or marketing portfolio is a portfolio developed to allow a teacher to present specific skills that a school administrator may wish to view. More

recently portfolios have been used to evaluate teachers (Curry, 2000; Gitlin & Smyth, 1989; Perkins & Gelfer, 1993). One limitation of the traditional paper portfolio is that it must be developed for a specific audience and is difficult to port between these audiences (Barrett, 1998).

Traditionally the teaching portfolio has been a purposeful collection of artifacts consisting of examples of student work, personal documents, instructional materials, and academic products related to teaching. These portfolio artifacts have been used to provide a more accurate portrayal of the teacher's performance both in the classroom and in other areas of education including community service, parent communication, collaboration with the professional community and district service (Barrett, 2000; Bull, Montgomery, & Coombs, 1994; Danielson & Abrutyn, 1997).

Digital Portfolios

A digital portfolio is defined as a meaningful collection of work that that has been captured electronically and demonstrates achievement or progress toward a goal (Wiedmer, 1998). Recent development in technology such as a Read-write CD-ROMs, Read-write DVDs, the Internet and networked databases have made it possible for teachers to create, maintain and present their portfolios to a wide range of audiences. As a result the digital portfolio is a topic that has been getting a great deal of academic attention recently. Digital portfolio offers the promise of a traditional teacher portfolio but at the same time offers new dimensions and advantages to the portfolio concept. The digital portfolio is an obvious extension to the traditional portfolio. It extends the capabilities of the traditional portfolio by making it portable and accessible (Polonoli,

2000). The digital portfolio also eases the problem of a bulky paper portfolio that can be difficult to store and manage. A digital portfolio also extends the audience that can view a portfolio (Barrett, 1998). Since a digital portfolio is generated through computer technology it is easier to manage and manipulate artifacts. Unlike the traditional paper-based portfolio this gives the digital portfolio's creator the ability to use the portfolio to serve multiple audiences and use the portfolio for multiple purposes. A web-based digital portfolio has the added benefit of allowing multiple users to simultaneously access a teacher's portfolio.

Current technology provides teachers the tools to create, maintain and present a dynamic digital portfolio. This digital teaching portfolio can consist of a variety of multimedia artifacts such as teacher-made materials, videos of classroom experiences, lesson plans with written reflections, digital photographs, instructor's comments, student assessments, classroom observations, research projects, or any other artifacts that represent one's accomplishments (Barrett, 2000; Farmer, 1997; Oros et al., 1998; Pulliam & Weitman, 1996/97). These digital artifacts can be combined with stand-alone multimedia software or web-based applications to present a multimedia depiction of the teacher and his or her professional growth.

Methods of digitizing and displaying artifacts include the use of scanners, digital video cameras, digital still photographs, multimedia programs, and audio converters (Barrett, 2000; Milman, 1999; Milone Jr., 1995; Naguidula, 1997; Oros et al., 1998). Since artifacts created in a digital portfolio are external files they can be recycled and used many times to easily present the teaching portfolio to a variety of audiences.

Recent advances in storage technology can allow the portfolio creator to collect and produce a much larger array of multimedia artifacts. These multimedia artifacts then become the basis for the selection process in the portfolio development. A digital portfolio can offer many advantages over the paper portfolios (Table 2).

Table 2 Comparisons of the Traditional and Digital Portfolio

Comparison	Digital Portfolio	Traditional Portfolio
Storage	Easy to store on CD ROM, a web-server, or database	Mainly manila folders, 3 ring binders or storage boxes.
Data	Hypertext can make searching and cross-referencing data easier therefore making it easier to retrieve and view specific, artifacts can be reused and recycled into various types of portfolios for different audiences	Data stored in a paper file
Accessibility	Needs a computer to access data	Can be viewed anywhere. Technology is not necessary
Audience	Can be configured for multiple audiences using the same digital artifacts	One copy is difficult to reconfigure for multiple audiences
Contents	All artifacts are digitally created making them easy to search and display in different formats such as CD ROM, database and web pages, contents can include multimedia elements that include video, audio, hypertext, animation and digital images and graphics	Mainly paper-based and flat files
Review	Web-based portfolios can have multiple reviewers access the portfolio simultaneously	Only one Reviewer can Review the portfolio at one time
Replicability	Can be easily replicated without degrading contents.	Traditional portfolios are difficult to replicate
Creation	Must develop technology skills -- Some software tools require advanced technology skills to create a portfolio	No special skills needed to create the portfolio
Compatibility	Must be compatible with the reviewers computer, at times special viewers or plugins are needed	No special equipment needed to view

Types of Digital Portfolios

The first digital teaching portfolio was created using multimedia programs such as Hyperstudio, PowerPoint or Director. This stand-alone portfolio allowed the teacher full access to multimedia artifacts such as hypertext, digital video and audio, scanned images, digital photographs, and text (Barrett, 2000). A portfolio created with these software tools allows the teacher to be creative in the development process. This portfolio can contain hypertext links that allow them to become non-linear, allowing the reviewer to jump to areas of specific interest. This type of portfolio is stored mainly on CD ROM disks and is easily transportable. One limitation of this type of digital portfolio is that it must be accompanied by a computer specific view or player and can make it difficult for a reviewer to access the portfolio if the most current technology is not available (Springfield, 2001).

As the Internet has become more common in educational settings, the web-based teaching portfolio has begun to emerge as a trend that many colleges of education are choosing to use with their students as part of the assessment process. Students make use of the same digital elements that are used in stand-alone multimedia programs but display them on the Internet. This digital portfolio is created in hypertext markup language (html) using graphical programs such as Dreamweaver, Claris Home Page or Front Page. This portfolio has all of the advantages of stand-alone multimedia programs and in addition can be displayed on the Internet, thus makes the audience that can view and review the portfolio much larger.

One concern about this type of digital portfolio is privacy. It is difficult to password protect these portfolios and concerns have been raised about the privacy of these portfolios (Springfield, 2001). One study (Carney, 2002) found that students that created web-based portfolios displayed on the Internet were not as open and reflective about the portfolio due to this concern.

A third type of digital portfolio that has been emerging is the database-driven web portfolio. The central component of this type of digital portfolio is a database that can be accessed through the Internet. This type of portfolio offers many of the advantages of the stand-alone multimedia and web-based portfolio. A database-driven web portfolio can display multimedia artifacts, is searchable, accessible from the Internet, and can allow the creator to reflect on growth over time. Since this portfolio is database-driven, it can provide the creator multiple ways to reference and display artifacts. In some pre-service teacher programs, as teacher candidate progress through his or her undergraduate career, the database-driven portfolio gives the teacher candidate an electronic area in which he or she can collect and store artifacts that may be used for the final portfolio. Since the portfolio is database-driven it also allows the artifacts that candidate has in his or her portfolio to be customized for different audiences and purposes.

Portfolio Development

The use of the Internet in the portfolio development process increases the creator's ability to effectively use their teaching portfolio. The use of the web provides the opportunity for candidates to work asynchronously from any place that they have access to a computer with a browser. Since the portfolio is database-driven it can be

password protected therefore protecting the creator's privacy. These digital portfolios can be easily updated and accessed over a long period of time, making them an excellent vehicle to observe professional growth on a long-term basis.

Some digital portfolios are developed around a template. These templates range from very general formats to strict guides that insure the portfolio's owner has completed all requirements (Farmer, 1997; Tuttle, 1997). As a result of this scaffolding, a debate has begun to develop around the validity of the use of templates in the portfolio process. One train of thought is that these templates hinder the creativity of the portfolio's creator while at the same time placing a damper on the reflective nature of a portfolio, due to the constraints issued by a template. On the other side it can be argued that due to skills needed to create a digital portfolio a certain amount of scaffolding is necessary (Barrett, Soulier, & Guerin, 2002). The newness of this portfolio is another limitation. The database driven portfolio has been used for only a few years. At this point it is still in the development stage and virtually no research has been conducted around this issue. In the case of the marketing portfolio, there is no data existing to suggest whether school administrators would prefer to view a structured portfolio that is predictable or whether they would prefer to view a portfolio that is more individualized. It is clear that more research needs to be conducted in this area (Barrett, 2002).

Another point that has received a great deal of academic attention that involves the digital portfolio centers on the amount of time and technical skill it takes to create a digital portfolio. One side of the issue poses that it takes too much time and skill to

create a multimedia portfolio and that this imposes too much stress and distraction on the creator of the portfolio, diminishing the reflective nature of the portfolio process (Irby & Brown, 1998). The other side of this debate postulates that the increased time needed to create a digital portfolio actually enhances and develops a teacher's technology skills, and that the process of developing and creating the portfolio generates the greatest benefit for the teacher (Barrett, 2000). One study (Amber & Czech, 2002) found that teacher candidates felt they would be more likely to be hired if they could demonstrate advanced technology skills through a digital portfolio. A study of the traditional paper portfolio versus a digital portfolio (Irby & Brown, 1998) found similar results. Irby (1998) studied two groups of preservice administrators. One group was required to create a traditional paper portfolio while the other was to create a digital portfolio using a multimedia program. While both groups felt that the portfolio process was a valuable one, the concerns of the two groups differed. The group that created traditional portfolios had concerns about what artifacts to include in the portfolio and how to present it, while the digital portfolio group devoted more time and concern to making the technology work and less time in what to include. The digital portfolio group also expressed greater feelings of stress in the portfolio development process but, when finished, felt a sense of accomplishment and the perception that they may be more able to get a job as a result of the demonstration of technology skills. Another concern of the digital portfolio group was a lack of confidence that the technology would work for the person reviewing the portfolio. They also felt that the digital portfolio would have been more useful if it could be emailed or displayed on the Internet.

Teaching Portfolios and the Hiring Process

A very real need for new teachers is developing in the United States. According to the Teacher Preparation StaR Chart (Technology, 2000), it is noted that the United States will need more than 2.2 million new teachers in the next ten years. Current research indicates that many teachers leave the profession after less than five years service, making the teacher selection process ongoing (United States Department of Education, 2000). It becomes critical that teachers entering the profession be carefully selected. It is also important that school administrators have access to the best data and tools to select the best candidates, when hiring. One such tool that has been evolving over the past twenty years is the teaching portfolio.

Recently there has been a growing interest in using portfolios in the teacher selection and hiring process (Bouas & Bush, 1994; Jacobson, 1997; Roden & Cardina, 1997). More and more colleges and universities are requiring students to produce a portfolio as they move through their careers. Some colleges request that these students upgrade their working portfolio into a marketing or hiring portfolio (Smolen & Newman, 1992; Weinberger & Didham, 1987).

Administrator Perceptions of Teacher Portfolios

There is evidence that school administrators show a propensity to use traditional portfolios to screen teacher candidates in the selection process (Newman et al., 1993; Weinberger & Didham, 1987; Williamson & Abel, 1989). Several studies have been conducted concerning administrator perceptions of the usefulness of teaching portfolios. One study (Weinberger & Didham, 1987) examined administrator perceptions of

portfolios prepared by teacher candidates at Bowling Green State University (BGSU). BGSU students are required to produce a working portfolio as part of their undergraduate work and then upgrade it to a marketing portfolio. They then present their portfolio to administrators at a job fair on campus. School administrators that attended the job fair were surveyed about their perceptions of these portfolios. In this study 83 percent of the administrators felt that the teaching portfolio was a useful tool. A similar study (Smolen & Newman, 1992) found comparable results. In a study of administrators involved in the hiring process 82 percent reported a willingness to review portfolios in the hiring process. Studies have also found that administrators feel that the portfolio could be a useful tool in the evaluation of teachers (Bull et al., 1994; Goff, 1999). Bull et al. (1994) compared the perspectives of general and special education administrators toward portfolios for teacher evaluation. All of the administrators felt that portfolios could be useful in teacher evaluation. It is clear that many school administrators are not opposed to using a teaching portfolio in the screening or evaluation of a teacher.

Portfolios and Time

While administrators generally perceive the portfolio as useful, one has to wonder if they actually have time to use a portfolio in the teacher selection process. Weinberger and Didham (1987) indicated that one major concern for administrators' use of portfolios was the time it took to evaluate and review a portfolio. Newman et al. (1993) investigated the time it took to review teaching portfolios prepared by teacher candidates and found that administrators spent from a few minutes to several hours reviewing portfolios. Smolen and Newman (1992) found that many administrators did not have

enough time to adequately review potential teacher candidates' portfolios at Bowling Green State University's job fair. Another study compared the perceptions of special and general education administrators' perceptions of portfolios and found that using portfolios was not too time consuming (Bull et al., 1994). Adequate time to perform all administrative duties is an issue for school leaders (Freston, 1998; Friedman, 1995; Jones, 1999). It is evident that more research needs to be done in this area.

Contents of a Portfolio

Current examination of the literature demonstrates that while administrators in general feel that portfolios should be used in the hiring process, they differ in what they would like to see in a teaching portfolio. Hiring practices vary from school district to district as does the qualifications of administrators concerning the hiring process. The main tools used in the hiring process are the resume, placement file and interview. In addition some school districts try to observe the teacher candidate actually teaching but in the rush to hire and the fact that the need for teachers is not known until the summer when classes are not in session this observation is eliminated from the hiring process. Videotape has been viewed as a solution to this problem (Boody & Montecinos, 1997). A digital portfolio can allow a teacher candidate to produce and display digital video of their teaching that can be easily viewed through a variety of formats.

Since hiring processes differ, one question that arises is what contents of a digital portfolio will administrators find useful? A digital portfolio can contain all of the contents of a traditional portfolio. One study found that the most useful artifacts to include in a teaching portfolio were student work, classroom photographs, and statements

about the applicants' teaching style, philosophy, and personal goals (Jacobson, 1997). Another study (Bouas & Bush, 1994) asked administrators to identify what type of evidence they felt would be important to include in a teaching portfolio. Resumes, certification, university placement files, field experiences, and evaluations summaries were the most common responses. One interesting finding was that administrators varied widely on the inclusion of video in the portfolio. Administrator comments fell into four categories 1) a video shows a teacher in action, 2) a video lacks validity, 3) administrators do not have time to watch video, and 4) videos can be helpful in identifying and comparing finalists. Bull (1994) compared the perceptions of special and general education administrators' perceptions of portfolios and found that they agreed on four items: letters of recommendation, autobiographical sketches, administrator evaluations and classroom management systems.

Administrator perceptions of what should be included in a portfolio vary widely. While Bouas (1994) found that the inclusion of video was questionable two studies (Newman et al., 1993) found that video was an important part of a portfolio. Williamson and Abel (1989) found teaching units to be useful while Bouas and Bush (1994) found that they were not very useful. Clearly there is lack of consensus on what should be included in a digital portfolio and further study needs to be conducted concerning what should go into a teacher's portfolio. One theme that emerged was the concern that a portfolio could become overloaded and contain too much information (Jacobson, 1997).

Summary

The digital teaching portfolio is a relatively new concept in education. Currently it is being used mainly in colleges for preservice teachers as they move through their undergraduate careers. For many years students have used traditional portfolios or grading systems to assess their progress. The traditional teaching portfolio has also begun to become more prevalent in education and is required for advanced licensing in some states and by the National Board for Professional Teaching Standards.

It is also evident that many administrators are not opposed to using traditional portfolios in the screening and selection of teachers. A digital portfolio can offer advantages for both the teacher candidate and the school administrator. Ease of access, time to review, and the ability to view a variety of multimedia artifacts can make this a useful tool in the selection process. In addition digital portfolios can allow teacher candidates to more rapidly and easily reach larger audience in the search for a job.

If the digital portfolio is to truly become a useful tool for screening and selecting teachers, several questions on administrators' knowledge and perception of the digital portfolio need to be examined. What do administrators know or not know about the digital portfolio? What do administrators think should be contained in a digital portfolio? What are the barriers of this tool? This study attempted to answer some of these questions and its methodology is described in Chapter 3.

Chapter 3

Research Methods

Introduction

This chapter provides a description of the methods used in this study. Topics include design, population and sample, data collection, instrument, research questions and data analysis.

Purpose

The purpose of this study was to determine the current perceptions Nebraska school administrators have regarding the use of a digital portfolio as a part of the teacher selection process. This included their current knowledge of digital portfolios, possible barriers to their use, elements of digital portfolios they perceive as useful, and general attitudes toward the use of technology in the hiring process.

Design

The questionnaire/survey method was the design used in this study. This survey was a cross-sectional survey of Nebraska school administrators. Since the issue of a digital teaching portfolio is an emerging topic in education, it is important to be able to obtain preliminary opinions from a sample of representative practitioners in the field. The questionnaire/survey method allows for the collection of preliminary data that can then be generalized to the entire population of school administrators in Nebraska (Creswell, 1994).

All of the information for this study was collected through a web-based survey. This allowed for rapid collection of sizable amounts of information from a diverse group.

Benefits of a web-based survey include rapid and automatic entry of data as it is sent to a server, the possibility of reaching respondents that might not be amenable to traditional methods, and the possibility of “real time” data collection reports (Graf, 2001). One question that the researcher must ask about a web-based survey is: Can a representative sample of participants be drawn (Creative Systems Research, 2000)? The design of this study collected data online from a targeted sample that was learning to use technology for administrative purposes. Thus, a highly appropriate sample, both in motivation and expertise was conveniently available. The data was collected, summarized and reported in Chapter 4. The purpose of the study was to collect information from Nebraska K-12 school administrators about their perceptions regarding the use of digital portfolios in the teacher hiring and selection process.

Population and Sample

The sample population for this study was a sub-group of Nebraska school administrators. This group participated in technology leadership training 2002-2003. The study was single-stage (Babbie, 1990) and included 290 Nebraska school administrators that were participating in the Leadership Talks Technology Academy, LLTA. This academy was funded by the Bill Gates foundation with the purpose of training Nebraska school administrators to use technology more effectively. Specifically, goals for the Academy are to:

1. Enhance administrators’ technology leadership skills in support of teaching, learning and data-driven decision-making.

2. Create learning environments that empower staff to infuse technology into teaching, learning and assessing student outcomes (Ziegler & Kile, 2001).

This group was chosen because of the nature of the technology training that it underwent. The LLTA group was a convenient group to survey. It met several times for training purposes and was obligated to complete the survey. The LLTA group was selected by the administrative staff of the Nebraska Department of Education and is purposefully representative of school districts from across Nebraska. Since participation in the LLTA program is voluntary, one can also assume that the group is interested in the use of technology in school administration.

Data collection

Data was collected through a web-based survey. The survey was developed by the researcher from questions drawn from a literature review and through consultation with experts in the field of digital portfolios.

Instrument

The questionnaire/survey method was the design used in this study. This survey was also a cross-sectional web-based survey of a sample of Nebraska school administrators. The questionnaire/survey method allows for the collection of preliminary data that can then be generalized to the entire population of school administrators in Nebraska (Creswell, 1994).

The first objective of the survey was to collect personal attribute data about each respondent. Personal demographic data about the respondent's tenure in teaching and administration was collected; the type of administrative position he or she serves in; as

well as data about gender. Data collected about individual settings included general demographic data. Data collected about individual settings included the size of the school, setting (urban, suburban or rural); grade levels and type of school, (public, private, etc.).

It is important to understand the how the LTTA group feels about technology. Dr. Brenda Loyd and Dr. Clarice Gressard's Computer Attitude Scale (Loyd & Gressard, 1984) followed the demographic section in order to obtain a general attitude toward computer technology from the LTTA participants.

The next section of the survey contained the questions pertaining to the use of digital portfolios for teacher selection. The questions in this section of the survey were developed from a literature review, attendance by the researcher at educational technology conferences in which there were breakout sessions on digital portfolios, personal conversations with experts in the area of digital portfolios, and from formal input by the faculty at the University of Nebraska at Omaha.

This section of the survey began with a brief introduction to the concept of digital teacher portfolios. The next part asked questions to determine if administrators perceive digital portfolios as useful in the teacher selection process. This asked administrators how they perceived the importance of specific artifacts that may be contained in a teacher's digital portfolio. Finally, the survey asked about perceived barriers to the use of digital portfolios for teacher screening or hiring.

The web-based survey was developed using FileMaker Pro, a database program, and was delivered via the Internet through an html interface. It was tested for access with

Netscape and Internet Explorer web browsers. The web-based survey contained three types of answering mechanisms. There were yes/no answers in radio button format, a Likert-type scale using radio button with four choices, and pull down menus to select from a pre-set range of options. The Likert scale ranged from 1 to 4 with 1 equaling strongly disagree and 4 equaling strongly agree. The scale was presented as a range from 1 to 4 with no delineations made for 2 or 3.

Graf (Graf, 2001) found that a web-based survey should take respondents no longer than 10-15 minutes to complete. In the survey pilot, the times it took a user to take the survey was recorded. The average time was 12 minutes. The survey was also designed so that no more than 1 and 1/2 screens will be displayed at any one time. Long screens tend to cause higher drop out rates (Graf, 2001).

The survey was field-tested with the assistance of local administrators and graduate educational administration classes. Administrators and educational administration students were able to take the survey on-line and make comments about the survey questions. As a result of comments provided by this group the survey was modified slightly to have more concise wording on several questions.

Research Questions

The following research questions were the focus of this study:

1. Do Nebraska administrators perceive digital portfolios as useful in the teacher selection process?
2. Do elementary and secondary administrators differ in their perceptions of which components of a digital portfolio are useful?

3. Is there a difference between elementary and secondary administrators and in their willingness to use digital portfolios in the teacher selection process?
4. Is there a relationship between the comfort level of administrators using technology and their willingness to use technology?
5. What do Nebraska school administrators perceive as major barriers to the use of digital portfolios for teacher screening or hiring?
6. Which types of evidence in a digital portfolio do Nebraska school administrators perceive as useful in the hiring process?
7. What are the backgrounds of administrators who report a willingness to use digital portfolios to guide their hiring practices?

Data Analysis

Since this was a cross-sectional survey, it was possible to get a sampling of administrators from different school levels, populations, and communities. Data was collected and analyzed using the SPSS statistics software. Responses to the survey items was compiled and analyzed with respect to the research questions.

Question 1 was answered using descriptive statistics including means, frequency distributions and rank-ordered items. Questions 2-4 were answered using independent t-tests at the .05 level of significance. Questions 5-6 were answered using descriptive statistics. Question 7 was answered using correlation and multiple regression. The results have been reported in Chapter 4.

Chapter 4

Results

The purpose of this dissertation study was to examine the perceptions of Nebraska school administrators about the use of digital portfolios in the teacher selection process. Chapter four will present the results and findings of this study. The sample population for this study was a group of 290 Nebraska school administrators participating in the Leadership Talks Technology Academy, (LTTA). The purpose of the Academy is to train Nebraska school administrators to use technology more effectively. Due to the nature of the training that the LTTA group was receiving the instrument selected to conduct the survey was a web-based survey. The web-based survey allowed for rapid collection of data from a diverse population. Upon administration in October of 2002, 187 of the 290 LTTA participants that were asked to complete the survey responded, resulting in a 64 percent return rate.

Survey responses were tabulated and frequencies were calculated on the demographic data provided by respondents. The sample population indeed represents a diverse set of school administrators in Nebraska that encompass a wide range of experiences.

The LTTA group chosen for the study are a cross-section of administrators from Nebraska. They are from urban, suburban and rural districts that represent a variety of schools ranging from elementary to secondary as well as public to parochial. Also represented are administrators from schools with varied student populations ranging from schools with less than 100 students to schools with greater than 2000 students.

Respondents had an administrative experience that ranged from less than one year to greater than 30 years as well as teaching experience that mirrored the administrative experience. This population's educational background spanned bachelors to doctorate degrees and their ages ranged from 26-65 years. Sixty-four percent of the respondents were male and 36 percent were female.

Research Question 1

Do Nebraska administrators perceive digital portfolios as useful in the teacher selection process?

Research question number one was answered using descriptive statistics including means and frequency distributions. The set of related survey questions was answered using a Likert scale that ranged from 1-4 with 1 equaling strongly disagree to 4 equaling strongly agree. There were no delineations made for 2 and 3. To answer this question, the means of survey questions 38-47, 71-74 and 82-84 were calculated (see Table 3).

Frequencies for each of the questions were also calculated to look for patterns that may exist in the distribution of the scores across the four-point scale (see Table 4). From the results it is clear that Nebraska school administrators perceive that digital portfolios can be useful in the teacher selection process. Table 3 also presents the means for each survey question related to this research question. The mean score of the seventeen survey questions relating to research question one was calculated to analyze Nebraska school administrators' perceptions toward the usefulness of a digital portfolio in the teacher selection process. The mean perception scores on a scale of 1 to 4 ranged from a low score of 1.99 to a high of 3.45. The overall mean score of the seventeen items dealing

with the Nebraska school administrator perceptions toward the usefulness of digital portfolios in the teacher selection process was 2.91 (SD=. 47) The seventeen items in Table 3 represent the questions respondents were asked concerning the usefulness of digital portfolios in the teacher selection process as well as the mean and standard deviation for each response to the question. Table 4 then presents the frequencies of the responses to the survey questions pertaining to research question 1.

Table 3

Means of Administrator Responses to Survey Questions Relating to Research Question 1

Survey Question	N	M	SD
A digital portfolio allows a teacher candidate to demonstrate technology skills more effectively.	178	3.45	0.61
A digital portfolio would be helpful before interviewing a teacher candidate.	180	3.42	0.70
I would be willing to use a teacher candidate's digital portfolio in the teacher selection process	180	3.39	0.66
I would be willing to use a teacher candidate's digital portfolio if I could access it on the Internet.	180	3.38	0.64
A digital portfolio would be helpful after interviewing a teacher candidate.	179	3.24	0.74
A digital portfolio would be a useful tool in the selection and screening of potential teachers.	180	3.20	0.60
A digital portfolio, when combined with an interview and college transcripts, can provide a complete picture of the teacher candidate.	181	3.20	0.69
I would be willing to use a teacher candidate's digital portfolio if I could access it on a CD ROM.	180	3.18	0.73
A digital portfolio can make it easier for the person selecting teachers to get a more complete picture of the candidate's skills.	181	3.07	0.64
A digital portfolio can demonstrate how the teacher candidate has developed over the years.	180	3.01	0.69
A digital portfolio can make managing teacher selection more efficient.	181	2.99	0.66
A digital portfolio would be helpful during the interview process.	180	2.98	0.77
A digital portfolio can tell more about a candidate's skills than documents in a placement file.	180	2.77	0.76
A digital portfolio can make it easier to validate a teacher candidate's references.	180	2.71	0.79
A digital portfolio can reliably depict a teacher candidate's skills in the classroom.	179	2.22	0.78
I would be more willing to interview a teacher candidate who has a digital portfolio than one that does not.	180	2.21	0.84
A teacher candidate that creates a digital portfolio will be a better teacher than one that does not.	181	1.99	0.81

Table 4

Frequency of Responses to Survey Questions Pertaining to the Usefulness of a DigitalPortfolio in the Teacher Selection Process

Survey Question	Frequency			
	1	2	3	4
A digital portfolio allows a teacher candidate to demonstrate technology skills more effectively.	1	8	79	90
A digital portfolio would be helpful before interviewing a teacher candidate.	5	7	75	93
I would be willing to use a teacher candidate's digital portfolio in the teacher selection process	2	12	80	86
I would be willing to use a teacher candidate's digital portfolio if I could access it on the Internet.	3	6	90	81
A digital portfolio would be helpful after interviewing a teacher candidate.	6	14	90	69
A digital portfolio would be a useful tool in the selection and screening of potential teachers.	2	12	114	52
A digital portfolio, when combined with an interview and college transcripts, can provide a complete picture of the teacher candidate.	2	22	95	62
I would be willing to use a teacher candidate's digital portfolio if I could access it on a CD ROM.	8	10	103	59
A digital portfolio can make it easier for the person selecting teachers to get a more complete picture of the candidate's skills.	4	19	119	39
A digital portfolio can demonstrate how the teacher candidate has developed over the years.	7	21	116	36
A digital portfolio can make managing teacher selection more efficient.	4	28	114	35
A digital portfolio would be helpful during the interview process.	6	37	91	46
A digital portfolio can tell more about a candidate's skills than documents in a placement file.	11	24	101	24
A digital portfolio can make it easier to validate a teacher candidate's references.	12	53	90	25
A digital portfolio can reliably depict a teacher candidate's skills in the classroom.	31	85	55	8
I would be more willing to interview a teacher candidate who has a digital portfolio than one that does not.	33	92	40	15
A teacher candidate that creates a digital portfolio will be a better teacher than one that does not.	52	85	37	7

Research Question 2

Do elementary and secondary administrators differ in their perceptions of which components of a digital portfolio are useful?

In a digital portfolio, artifacts are evidence or examples of a specific behavior or a standard that represents a teacher's ability to teach. In a presentation portfolio these artifacts demonstrate a teacher's best work and have been transformed into a digital format through some technology such as a scanner, digital video camera or computer (Barrett, 2000).

To answer the second research question administrators were presented with a list of twenty-three possible artifacts that could appear in a teacher's digital portfolio and were asked to rank their usefulness in the teacher selection process on a scale of 1 to 4 with 1 being not at all useful and 4 being very useful. Since the study was exploratory in nature, the .05 significance level was maintained rather than a more restrictive .01 level, even with a larger number of analyzed items. Table 5 reports the results of independent samples t-tests at the .05 level, equal variances assumed, that were calculated to produce statistics comparing elementary and secondary administrator perceptions of which artifacts in a teacher's digital portfolio were useful. Administrators were selected for inclusion in this test if they could be clearly identified as working in an elementary or secondary setting. Administrators that did not fit into either of these categories were excluded. Elementary administrators included any administrator that worked in a school that could be only identified as PreK-6 and secondary administrators in 7-12.

As a result of the t-tests the only artifact that was found to be significantly different between elementary and secondary administrators was letters of recommendation ($t(92)=2.07, p=0.041$). It is important to note that while there was a significant difference between elementary and secondary administrators in the way they perceived the importance of letters of recommendation, the difference in the means was small and both means were above the median (2.5) of the Likert scale.

Table 5 also presents the rank order list of the artifacts elementary and secondary administrators perceive to be important. Nine of the top ten items perceived as useful in a teacher's digital portfolio were similar between elementary and secondary administrators, although the artifacts were not in the same order.

Table 5

Group Statistics, Elementary and Secondary Administrator Rating of Usefulness of Artifacts in a Teacher's Digital Portfolio

Artifact Ranking (Elem.)	Elem. <u>M</u>	Elem. <u>SD</u>	Artifact Ranking (Sec.)	Sec. <u>M</u>	Sec. <u>SD</u>
Teaching Video	3.54	0.65	Resume	3.62	0.74
Resume	3.46	0.73	Certification	3.52	0.87
Professional Appearance	3.46	0.70	Professional Appearance	3.44	0.75
Classroom Management	3.39	0.74	Teaching Video	3.41	0.61
Communication - Parents	3.37	0.72	Communication - Parents	3.38	0.70
Philosophy	3.34	0.73	Classroom Management	3.32	0.73
Field Experiences	3.34	0.76	Philosophy	3.32	0.68
Certification	3.25	0.78	Content Knowledge	3.18	0.67
Searchable Contents	3.25	0.80	Teacher Made Materials	3.18	0.63
Classwork	3.20	0.80	Field Experiences	3.15	0.93
Placement Files	3.20	0.74	Searchable Contents	3.15	0.70
Clinical Experiences	3.20	0.71	Classwork	3.15	0.74
Content Knowledge	3.17	0.77	Placement Files	3.12	0.89
Reflections	3.10	0.72	Presentations	3.12	0.77
Theory	3.08	0.77	Clinical Experiences	3.09	0.71
Presentations	3.07	0.81	Teaching Units	3.00	0.78
Teacher Made Websites	3.07	0.83	Reflections	2.88	0.73
Teaching Units	3.02	0.78	Theory	2.88	0.73
Assessment Activities	3.02	0.75	Results of Teacher Exams	2.85	0.83
Letters of Recommendation	2.98	0.76	Lesson Plans	2.82	0.72
Teacher Made Materials	2.97	0.76	Teacher Made Websites	2.79	0.81
Results of Teacher Exams	2.92	0.84	Assessment Activities	2.71	0.76
Lesson Plans	2.92	0.84	Letters of Recommendation	2.65	0.73

Table 6

t-test for Equality of Means, Elementary and Secondary Administrator Rating of
Usefulness of Artifacts in a Teacher's Digital Portfolio

	<i>t</i>	<i>df</i>	<i>p</i>
Resume	-1.016	91	0.312
Certification	-1.477	90	0.143
Placement Files	0.475	90	0.636
Philosophy	0.100	91	0.920
Clinical Experiences	0.750	91	0.455
Field Experiences	1.084	91	0.281
Teaching Video	0.953	91	0.343
Searchable Table of Contents	0.649	91	0.518
Teaching Units	0.101	91	0.920
Results of Teacher Exams	0.368	90	0.714
Lesson Plans	0.536	91	0.593
Class Work	0.334	91	0.739
Assessment Activities	1.910	91	0.059
Letters of Recommendation	2.070	90	0.041*
Communication with Parents	-0.062	91	0.951
Teacher Made Materials	-1.361	91	0.177
Classroom Management	0.418	91	0.677
Reflections	1.418	90	0.160
Content Knowledge	-0.044	91	0.965
Theory of Education	1.2420	91	0.217
Presentations	-0.292	91	0.771
Teacher Made Websites	1.549	91	0.125
Professional Appearance	0.106	91	0.916

* Significant at the $p < .05$ level.

Research Question 3

Is there a difference between elementary and secondary administrators and in their willingness to use digital portfolios in the teacher selection process?

An independent t-test at the .05 level of significance was calculated to determine if there was a difference between elementary and secondary administrators willingness to use digital portfolios in the teacher selection process. Administrators were selected for inclusion in this test only if they could be clearly identified as working in either an elementary or secondary setting. Administrators that did not fit into either of these categories were excluded. Elementary administrators included any administrator that worked in a school that could be only identified as PreK-6 and secondary administrators in 7-12.

There were 59 administrators identified as only elementary and 34 identified as only secondary for this test. Willingness to use a teacher's digital portfolio was determined by calculating the mean of questions 38-47, 71-74 and 82-84. The mean scores of elementary school administrators ($M=3.01$, $SD=.40$) was slightly higher than secondary administrators ($M=2.91$, $SD=.47$). The difference was not statistically significant, ($t(91)=1.124$, $p=.220$, two-tailed).

Research Question 4

Is there a relationship between the comfort level of administrators using technology and their willingness to use technology?

To answer this question, administrators completed, as part of the survey, a Computer Attitudes Scale that determined their attitude and comfort with technology. A

mean score of the 30 survey questions on the Computer Attitude Scale was calculated in order to analyze the comfort level of the respondent toward computer technology. The Computer Attitudes Scale used a four-point Likert Scale. Some questions were positively skewed and others were negatively skewed. Negative scores had to be reversed to obtain a positive value. The mean attitude scores for each of these questions were then calculated. Mean scores ranged from a low of 1.06 to a high of 4.00. The overall mean score of the 30-item attitude total score was 3.34 (SD=.45).

To be able to compute a t-test, two groups need to be selected. Participants were selected for the less comfortable group if their mean score on the Computer Attitude Scale fell below 1.33 and selected for the more comfortable group if their mean score on the Computer Attitude Scale fell above 2.66 on the 1-4 Likert scale. These ranges represent the upper and lower third of the Likert scale. Since only 1 of the participants fell in the low range, the t-test could not be computed.

In order to further explore the data to determine if any relationship existed between computer comfort level and willingness to use a digital portfolio, the data was re-examined. Since the data was positively skewed toward the high end of the computer comfort scale, these results must be view cautiously. The means of the top 25 percent and bottom 25 percent of the responses on the Computer Attitudes Scale were selected and re-coded into high comfort and low comfort. An independent samples t-test was run to compare the means of the group selected as high and low using scores on their willingness to use a digital portfolio. The results of this t-test indicated a significant difference at $p < .05$ between the group scoring in the lowest 25 percent and the group

scoring in the highest 25 percent on the Computer Attitudes Scale (see table 5). It does seem that there is a relationship between one's computer attitude and willingness to use a digital portfolio in the teacher selection process. Further research needs to be conducted and a different measure of attitude selected that will insure a more differentiated grouping.

Table 7

Results of Independent Samples t-test Comparing Computer Attitudes with Willingness to Use a Digital Portfolio in the Teacher Selection Process

	ATTITUDE	N	M	SD
USEFUL	Lowest 25 %	45	2.7269	.4143
	Highest 25 %	45	3.1796	.3838
<u>Independent Samples Test</u>				
	t	df		P
USEFUL	-5.377	88		.0001

Research Question 5

What do Nebraska school administrators perceive as major barriers to the use of digital portfolios for teacher screening or hiring?

Question five was answered by calculating the means of the survey questions 75-81. These survey questions presented possible barriers to using a digital portfolio in the teacher selection process. The questions used a 4-point Likert scale with one being a major barrier and 4 being no barrier. Table 8 presents the results of these calculations. Three of the mean scores of the barriers presented to the administrators fell below the median of 2.5 and the other four were above the median. Five of the barriers were

closely grouped around the median. Items reported to be the greatest barriers to using a digital portfolio were lack of technical support ($\underline{M} = 2.41$) followed by lack of knowledge of how to use a digital portfolio ($\underline{M} = 2.42$) and the lack of equipment necessary to access a digital portfolio ($\underline{M} = 2.44$). Items that were perceived as non-barriers to using a digital portfolio in the teacher selection process were the administrator's willingness to find the time to view a digital portfolio ($\underline{M} = 3.2$) and the perception that the administrator's had the necessary technical skills to use a teacher's digital portfolio ($\underline{M} = 3.12$).

Table 8

Means of Administrator Perceptions of Major Barriers to the Use of Digital Portfolios in the Teacher Selection Process Ranked from Greatest Barrier to Least Barrier

Barriers	N	M	SD
A barrier to using a digital portfolio is the technology support needed to effectively use a digital portfolio.	178	2.41	0.86
A barrier to using a digital portfolio is my knowledge about digital portfolios and how to use one in the teacher selection process.	178	2.42	0.88
A barrier to using a digital portfolio is the lack of equipment it would take.	179	2.44	0.97
A barrier to using a digital portfolio is the time it will take to assess the candidate's portfolio	179	2.51	0.91
I can trust the reliability of a teacher's digital portfolio.	174	2.57	0.72
I have the technological skills to use a digital portfolio to evaluate a teacher candidate's digital portfolio.	178	3.12	0.76
I would take the time to use a digital portfolio in the teacher selection process	179	3.2	0.69

Research Question 6

Which types of evidence in a digital portfolio do Nebraska school administrators perceive as useful in the hiring process?

Question six was answered by calculating the means of survey questions 48-69. Administrators were presented with a list of 23 possible artifacts that could appear in a teacher's digital portfolio. They were asked to rank their perceived usefulness of each artifact of on a scale of 1 to 4 with 1 being not at all useful and 4 being very useful. Table 9 presents the means of these calculations and the ranking of items from the perception of being most useful to least useful. A *resume* ($\underline{M} = 3.49$) was perceived as the most useful item to be included in a portfolio closely followed by *evidence of the ability to present one's self professionally* ($\underline{M} = 3.47$), *digital video clips of teaching experiences* ($\underline{M} = 3.43$), *evidence of classroom management skills* ($\underline{M} = 3.39$) and *samples of communication with parents* ($\underline{M} = 3.439$). The administrators perceived the *results of teacher exams* as least useful ($\underline{M} = 2.80$). Rated slightly above this was *letters of recommendation* ($\underline{M} = 2.82$), *lesson plans* ($\underline{M} = 2.88$), *samples of P-12 assessments* ($\underline{M} = 2.90$) and *teacher made websites* ($\underline{M} = 2.92$). All items received a rating above the median score of 2.5. Items ranged from a low of 2.82 for results of teacher exams to 3.49 for a teacher's resume. As Nebraska school administrators rated their perceived usefulness of the possible artifacts in a teacher's digital portfolio, the difference in the mean scores between the highest ranked item, *resume*, and the lowest ranked item, *results of teacher exams* was .67.

Table 9

Means of Administrator Rating of Usefulness of Artifacts in a Teacher's Digital Portfolio
Ranked from Most Useful to Least Useful

	N	M	SD
Resume	181	3.49	.73
Professional Appearance	181	3.47	.71
Teaching Video	181	3.43	.71
Classroom Management	180	3.39	.74
Communication with Parents	181	3.39	.70
Certification	180	3.37	.81
Field Experiences	180	3.29	.76
Searchable Table of Contents	181	3.22	.78
Placement Files	180	3.22	.81
Content Knowledge	181	3.18	.71
Philosophy	181	3.13	.80
Clinical Experiences	181	3.13	.69
Samples of Class Work	180	3.09	.76
Presentations	181	3.07	.76
Reflections	179	3.06	.73
Teacher Made Materials	181	3.06	.70
Theory of Education	181	3.01	.79
Teaching Units	181	3.00	.73
Teacher Made Websites	180	2.92	.84
Assessment Activities	181	2.90	.78
Lesson Plans	181	2.88	.78
Letters of Recommendations	179	2.82	.77
Results of Teacher Exams	179	2.80	.86
Valid N (listwise)	173		

Research Question 7

What are the backgrounds of administrators who report a willingness to use digital portfolios in the teacher selection process?

A multiple regression was run with the variables school setting, grade levels, student population, years as an administrator, years as a teacher, and highest degree to determine which might be predictors of a school administrator's willingness to use a

digital portfolio in the teacher selection process. The regression analysis showed some prediction for the variables of gender ($t = 0.179$, $p = 0.021$) and age ($t = -0.163$, $p = 0.036$) in an administrator's willingness to use a digital portfolio in the teacher selection process. The following factors were not statistically shown to be viable factors: school setting ($t = 0.688$, $p = 0.493$), grade levels ($t = 0.831$, $p = 0.407$), student population ($t = 1.139$, $p = 0.256$), years as an administrator ($t = -0.091$, $p = 0.928$), years as a teacher ($t = -1.046$, $p = 0.297$) and highest degree ($t = 0.331$, $p = 0.741$) and did not add significantly to the prediction of an administrator's willingness to use a digital portfolio in the teacher selection process. The observed linear regression equation for the model is $y = 51.212 + 1.891(\text{Gender}) - 0.886(\text{Age}) + E$. Due to the large standard error (7.92) and the relatively small R square (.05) this regression equation should be considered exploratory in nature. Further research might further examine the predictive power of gender and age in examining school administrators' willingness to use digital portfolios in the teacher selection process. Adjusted R square = .053; $F(2,159) = 5.527$, $p < 0.005$ (using the stepwise regression method).

Summary

This study presents administrator perceptions about the use of digital portfolios in the teacher selection process. Based on the data collected in this study it is clear that Nebraska school administrators feel that a digital portfolio can be a useful tool in the teacher selection process. The analysis of survey results pertaining to research question one provides evidence that Nebraska school administrators would be willing to use a digital portfolio in the teacher selection process. Both elementary and secondary

administrators tend to agree on the types of artifacts they would find useful in a teacher's digital portfolio. Analysis of the survey questions pertaining to the perceived barriers to using a digital portfolio in the teacher selection process demonstrated school administrators did perceive some barriers to the use of a digital portfolio.

It is also important to note that the results of this study need to be applied carefully. The use of digital teaching portfolios for teacher selection is an emerging trend in education and there is a general lack of research in the use of digital portfolios. In addition, school administrator's lack of general knowledge about the portfolio process can also be a limitation. Chapter five will present a summary of the results as well as discussion and interpretation of the results of this study within this context.

Chapter 5

Discussion

Introduction

Finding and appointing the best possible teacher for a vacant teaching position is one of the most important decisions a school administrator will make and can have extensive consequences for students, faculty and the institution (Wise, Darling-Hammond, & Barnett, 1987). Many administrators are aware of this and appear to be willing to use new tools to assist in this process. Grambling, (2000) states that it is much easier to invest time in finding and selecting the right teacher for the job than spend a great deal of time in retraining or removing an ineffective one.

The digital portfolio can become another tool that school administrators use to help with the teacher selection process. Before universities or individual students spend a great deal of time and resources in creating and developing a digital portfolio plan, it is important to study the perceptions of the school administrators who may be using the digital portfolio in the teacher selection process. It is important for individuals or universities to note whether they perceive a digital portfolio as useful and, if so, what contents of a digital portfolio they feel are important in making a valid and reliable judgment about the teacher's abilities to teach.

The purpose of this study was to examine Nebraska School administrators' perceptions of the digital portfolio in the teacher selection process. The use of the digital portfolio in education is a trend that is rapidly growing in popularity (Curry, 2000; Lyons, 1998; Riggs & Sandlin, 2000; Wolf, 1996). Many colleges of education are requiring

students to create a digital portfolio to authentically demonstrate teaching standards. It is reasonable to assume that the teacher candidate who takes the time to create a portfolio would want to use it to acquire a teaching position. Since using a digital portfolio for teacher selection is an emerging practice, it becomes important to gather the perceptions of school administrators that will be using these portfolios.

Given the excessive demands on principals' time (Freston, 1998; Friedman, 1995; Jones, 1999; Laws, 1990) and the relatively low level of principal technical expertise (Hope, 1999; Schoeny, 1999), one has to wonder if the digital portfolio will be a practical tool for screening perspective teachers with respect to selection. The data collected and analyzed in this study presents an exploratory glimpse into how Nebraska school administrators perceive digital portfolios in the teacher selection process.

The sample population for this study was a group of 290 Nebraska school administrators participating in the Leadership Talks Technology Academy (LLTA). The purpose of the LLTA is to train Nebraska school administrators to use technology more effectively. Since participation in the LLTA program is voluntary, one can assume that the group is interested in the use of technology in school administration. Data was collected using an online survey of the 2002-2003 LLTA participants. The survey was sent to all 290 participants of the LLTA group of which 187 responded for a 64 % return rate.

The questionnaire/survey method was the design used in this study. The survey collected demographic data of the participants as well as their perceptions about using the digital portfolio in the teacher selection process. The survey was web-based and

contained three types of answering mechanisms. There were yes/no answers in radio button format, a Likert-type scale using a radio button for each of the five choices, and pull-down menus to select from a pre-set range of options.

Results Summary

Research Question 1

Do Nebraska administrators perceive digital portfolios as useful in the teacher selection process?

Results Summary

Nebraska school administrators perceive that a digital portfolio would be useful in the teacher selection process. The overall mean score of the 14 items on the survey of the LTTA group asking about Nebraska school administrator perceptions about the usefulness of digital portfolios in the teacher selection process was 2.91 (SD=.47). The means of the seventeen questions on the survey relating to the usefulness of digital portfolios in the teacher selection process were above the mean of 2.5.

Of the seventeen questions asked on the survey that contributed to the result of this question just three of the mean scores of the responses scored below the mean of 2.5. Two of the questions below the mean of 2.5 were related to whether administrators felt that teacher candidates that created digital portfolios would be more qualified as teachers than those that did not create digital portfolios. The other question that scored below the mean asked about administrators' perceptions of the reliability of the portfolio contents.

Research Question 2

Do elementary and secondary administrators differ in their perceptions of which components of a digital portfolio are useful?

Results Summary

To answer Research Question 2, administrators were presented with a list of twenty-three possible artifacts that could appear in a teacher's digital portfolio and were asked to rank the usefulness of each on a scale of 1 to 4, with 1 being not at all useful to 4 being very useful.

There were no significant differences in elementary or secondary administrator perceptions of which artifacts in digital portfolio were useful, with the exception of letters of recommendation ($t(92)=2.07, p=0.041$). It is important to note that while there was a significant difference between elementary and secondary administrators in the way they perceived the importance of letters of recommendation, the difference in the means was small and both means were above the median (2.5) on the Likert scale. Nine of the top ten items perceived as useful in a teacher's digital portfolio were similar between elementary and secondary administrators, although the artifacts were not in the same order (see Table 10).

Table 10

Group Statistics, Elementary and Secondary Administrator Rating of Usefulness of Artifacts in a Teacher's Digital Portfolio

Artifact Ranking (Elem.)	Elem. <u>M</u>	Elem. <u>SD</u>	Artifact Ranking (Sec.)	Sec. <u>M</u>	Sec. <u>SD</u>
Teaching Video	3.54	0.65	Resume	3.62	0.74
Resume	3.46	0.73	Certification	3.52	0.87
Professional Appearance	3.46	0.70	Professional Appearance	3.44	0.75
Classroom Management	3.39	0.74	Teaching Video	3.41	0.61
Communication - Parents	3.37	0.72	Communication - Parents	3.38	0.70
Philosophy	3.34	0.73	Classroom Management	3.32	0.73
Field Experiences	3.34	0.76	Philosophy	3.32	0.68
Certification	3.25	0.78	Content Knowledge	3.18	0.67
Searchable Contents	3.25	0.80	Teacher Made Materials	3.18	0.63
Class Work	3.20	0.80	Field Experiences	3.15	0.93
Placement Files	3.20	0.74	Searchable Contents	3.15	0.70
Clinical Experiences	3.20	0.71	Classwork	3.15	0.74
Content Knowledge	3.17	0.77	Placement Files	3.12	0.89
Reflections	3.10	0.72	Presentations	3.12	0.77
Theory	3.08	0.77	Clinical Experiences	3.09	0.71
Presentations	3.07	0.81	Teaching Units	3.00	0.78
Teacher Made Websites	3.07	0.83	Reflections	2.88	0.73
Teaching Units	3.02	0.78	Theory	2.88	0.73
Assessment Activities	3.02	0.75	Results of Teacher Exams	2.85	0.83
Letters of Recommendation	2.98	0.76	Lesson Plans	2.82	0.72
Teacher Made Materials	2.97	0.76	Teacher Made Websites	2.79	0.81
Results of Teacher Exams	2.92	0.84	Assessment Activities	2.71	0.76
Lesson Plans	2.92	0.84	Letters of Recommendation	2.65	0.73

Research Question 3

Is there a difference between elementary and secondary administrators in their willingness to use digital portfolios in the teacher selection process?

Results Summary

An independent t-test at the .05 level of significance was calculated to determine if there was a difference between elementary and secondary administrators willingness to use digital portfolios in the teacher selection process. The mean scores of elementary school administrators ($M=3.01$, $SD=.40$) were slightly higher than secondary administrators ($M=2.91$, $SD=.47$). The difference was not statistically significant, ($t(91)=1.124$, $p=.220$, two-tailed).

Research Question 4

Do principals that feel more comfortable with technology report a greater willingness to use digital portfolios in the teacher selection process than those that do not?

Results Summary

In conjunction with Research Question 4, administrators completed a Computer Attitudes Scale that determined their attitude and comfort with technology. A mean score of the 30 survey questions on the Computer Attitude Scale was calculated in order to analyze the comfort level of Nebraska school leaders toward computer technology. The Computer Attitudes Scale used a four-point Likert Scale. Some questions were positively skewed and others were negatively skewed. Negative scores had to be reversed to obtain a positive for summative and mean computation. The mean attitude scores for each

respondent were calculated. Mean scores ranged from a low of 1.06 to a high of 4.00. A high score indicated a more positive attitude toward technology while a lower score indicated a less positive attitude toward technology. The overall mean score of all the respondents on the 30-item attitude scale was 3.34 (SD=.45).

Participants were selected for the less comfortable with technology group if their mean score on the Computer Attitude Scale fell below 1.33, while those selected for the more comfortable with technology group had mean scores on the Computer Attitude Scale above 2.66 on the 1-4 Likert scale. Since only one of the participants fell in the low range, the t-test could not be computed.

In order to further explore the data to determine if any relationship existed between computer comfort level and willingness to use a digital portfolio, the data was re-examined. The means of the highest 25 percent of the scores and lowest 25 percent of the scores on the Computer Attitudes Scale were selected and re-coded into high comfort for high scores and low comfort for low scores. An independent samples t-test was run to compare the means of the group selected as high and low with the mean scores on their responses to their willingness to use a digital portfolio in the teacher selection process. The results of this t-test indicated a significant difference between the group scoring in the lowest 25 percent and the group scoring in the highest 25 percent on the Computer Attitudes Scale. Using these subgroups, there appears to be a relationship between one's attitude toward computers and his or her willingness to use a digital portfolio in the teacher selection process. Further research needs to be conducted using a measure of attitude that will insure a more differentiated grouping.

Research Question 5

What do Nebraska school administrators perceive as major barriers to the use of digital portfolios for teacher screening or hiring?

Results Summary

Administrators were presented seven possible barriers to using a digital portfolio in the teacher selection process. Three of the mean scores of the barriers presented to the administrators fell below the median of 2.5 and four were above the median. Five of the barriers were closely grouped around the median. The barrier with the lowest mean score was lack of technical support ($\underline{M} = 2.41$) followed by lack of knowledge of how to use a digital portfolio ($\underline{M} = 2.42$) and the lack of equipment necessary to access a digital portfolio ($\underline{M} = 2.44$). The item perceived to be the least barrier to using a digital portfolio in the teacher selection process was the administrator's willingness to find the time to view a digital portfolio ($\underline{M} = 3.2$). This was followed closely by the perception that the administrator's had the necessary technical skills to use a teacher's digital portfolio ($\underline{M} = 3.12$).

Research Question 6

Which types of evidence in a digital portfolio do Nebraska school administrators perceive as useful in the hiring process?

Results Summary

Administrators were presented with a list of 23 possible artifacts that could appear in a teacher's digital portfolio. They were asked to rank their perceived usefulness of each artifact of on a scale of 1 to 4 with 1 being not at all useful and 4 being very useful.

A *resume* ($\underline{M} = 3.49$) was perceived as the most useful item to be included in a portfolio closely followed by *evidence of the ability to present one's self professionally* ($\underline{M} = 3.47$), *digital video clips of teaching experiences* ($\underline{M} = 3.43$), *evidence of classroom management skills* ($\underline{M} = 3.39$) and *samples of communication with parents* ($\underline{M} = 3.439$). The administrators perceived *the results of teacher exams* as least useful ($\underline{M} = 2.80$). Rated slightly above this was *letters of recommendation* ($\underline{M} = 2.82$), *lesson plans* ($\underline{M} = 2.88$), *samples of P-12 assessments* ($\underline{M} = 2.90$) and *teacher made websites* ($\underline{M} = 2.92$). All items received a rating above the median score of 2.5. Items ranged from a low of 2.82 for results of teacher exams to 3.49 for a teacher's resume.

Research Question 7

What are the backgrounds of administrators who report a willingness to use digital portfolios in the teacher selection process?

Results Summary

A multiple regression was run with the variables school setting, grade levels, student population, years as an administrator, years as a teacher, and highest degree to determine which might be predictors of a school administrator's willingness to use a digital portfolio in the teacher selection process. The regression analysis showed some prediction for the variables of gender ($t = 0.179$, $p = 0.021$) and age ($t = -0.163$, $p = 0.036$) in an administrator's willingness to use a digital portfolio in the teacher selection process. Adjusted R square = .053; $F(2,159) = 5.527$, $p < 0.005$ (using the stepwise method).

Due to the large standard error (7.92) and the small r square (.05) this result should be considered exploratory in nature. Further research might look at the predictive

power of gender and age in examining school administrators' willingness to use digital portfolios in the teacher selection process.

Discussion and Implications

As the data was collected and analyzed, three themes began to emerge about how administrators perceive the use of digital portfolios in the teacher selection process. First, is the notion of school administrators' willingness to use a digital portfolio in the teacher selection process. Second, how a digital portfolio can aid in the teacher selection process and what information that school administrators would find useful in a digital portfolio. Third, is what administrators perceive as barriers to using a digital portfolio in the teacher selection process. These themes will guide the discussion and implications of this study.

Usefulness of a Digital Portfolio

Nebraska school administrators do feel that the digital portfolio can be a useful tool in the teacher selection process. This is not surprising given the importance of the task of selecting the right person for the job. With the complexity of teaching and a declining pool of candidates for jobs (Kantrowitz & Wingert, 2000), it is critical that the person making the decision to hire a teacher have as much data as possible to make a valid decision.

Several studies have shown that administrators are willing to use traditional teaching portfolios in the teacher selection process (Newman et al., 1993; Weinberger & Didham, 1987; Williamson & Abel, 1989). One study (Weinberger & Didham, 1987) examined administrator perceptions of portfolios prepared by teacher candidates at Bowling Green State University. This study found that 83 percent of the administrators

felt that the teaching portfolio was a useful tool. A similar study of administrators involved in the hiring process found that 82 percent of the administrators surveyed reported a willingness to review portfolios in the hiring process (Smolen & Newman, 1992).

In this dissertation study, support for using a digital portfolio in the teacher selection process was very common. One participant stated that he or she felt that it would take more time and effort to use a digital portfolio but that the benefits of a digital portfolio greatly outweigh the effort needed to use a digital portfolio. Similarly, another participant stated,

“I believe it is an excellent tool to assist the selection process. It will take time for it to become a standard for all candidates but I believe it has enormous potential not only for selection but also for teacher evaluation within our schools. I would consider it an asset to have our new teachers come in with the knowledge and skills to develop professional digital portfolios.”

The Digital Portfolio as an Aide in the Teacher Selection Process

In order for any innovation in administrative technology to be useful, administrators need to see its value in the timely completion of their tasks. This sample of Nebraska school administrators felt that using a digital portfolio could assist in managing the teacher selection process, that it would make the teacher selection process more efficient and that it could make it easier to validate a teacher candidate's references.

These School administrators felt that they could learn about a prospective teacher candidate through the use of a digital portfolio. A digital portfolio has the potential to provide a wide variety of information about a person's ability to teach. The digital portfolio can be used in conjunction with the interview process to provide a richer view

of the teacher candidate. School administrators felt that a digital portfolio would be a useful tool to be used before and after an interview. In general, a digital portfolio has the potential to provide immediate access to information about a teacher candidate across the World Wide Web or on CD Rom. Since the portfolio is digital and can be searchable, an administrator making a hiring decision can look for specific traits or skills needed to match a specific position.

Nebraska school administrators perceived the digital portfolio as an aide in providing information about a teacher candidate. They feel that a digital portfolio can provide a more complete picture of the teacher candidate's performance. As one respondent commented,

“I believe it offers an overview of the teacher candidate's skills and experiences. I have used written portfolios; however, not electronic. The electronic portfolio would allow the same overview and would be more efficient in obtaining the information.”

Elementary and secondary administrators agree on the types of artifacts they perceive as important to include in a digital teaching portfolio (see table 9). Both elementary and secondary administrators felt that all of the possible artifacts presented were important. Items they rated as very important to be included in a teacher's digital portfolio included:

- The ability to present one's self professionally
- A resume evidence of classroom management skills
- Sample communication with parents
- Examples of field experience
- The teacher candidate's philosophy of education

A digital video clip can be used to present many types of artifacts in a teacher's digital portfolio. Digital video clips of teacher candidates were perceived as important to both elementary and secondary administrators. This is consistent with the findings of another study. Bouas (1994) found that videotape of teaching experience was an important portfolio component. The study found that a little over 50 percent of the administrators surveyed would view videotape from the teacher's portfolio. With the recent developments in technology that make the ease of creating, editing, and presentation of digital video more common, one would expect the use of digital video-based artifacts to be perceived as important to be included in a digital portfolio.

Perceived Barriers to Using a Digital Portfolio in the Teacher Selection Process

While many administrators perceived a digital portfolio as important in the teacher selection process, a general lack of knowledge about how to use a digital portfolio was reported by administrators. This lack of knowledge about how to use a digital portfolio may have caused some administrators to give possible portfolio artifacts higher rather than lower ratings in order to not miss anything perceived as important. When asked to rate barriers to using a digital portfolio the mean score of all administrators was 2.42 on a four-point scale, indicating that there was a general concern about their knowledge of digital portfolios

Time appears to be perceived as somewhat of a barrier. Weinberger (1987) found this to be true as well. In a study of administrator perceptions toward traditional portfolios, the time it took to review a teacher's portfolio was considered a problem. The mean score of the LTTA group's response to the survey question asking if school

administrators felt that a barrier to using a digital portfolio was the time it would take to access and use the portfolio was 2.51. That is slightly above the mean of 2.50 for the four point Likert scale used in the survey. But when school administrators were asked if they would take the time to use a digital portfolio in the teacher selection process, the mean score of the respondents was 3.20 on a scale of one to four. This indicates that while they perceive the digital portfolio as time consuming, it is a process that is worth the investment in time. One survey participant stated,

“...the candidate needs to remember to organize things in such a way that it is easy to get information. When sorting through candidates you only have so much time to make a decision on who to call for an interview and that means getting the information to the administrator in a clear concise and quick manner.”

As a result it seems important that a digital portfolio be clear and easily searched. One of the top items administrators perceived as important to a digital portfolio was a searchable table of contents. An advantage of a digital portfolio is that since it is digital, methods of searching can be developed. In database-driven digital portfolios it is possible to customize a portfolio to present only information that may be critical to the job being sought.

While there was support for using digital portfolios in the teacher selection process, administrators did not feel that the process of creating a digital portfolio would make one a better teacher. One thought that did reoccur in the survey data was the administrator's trust in the reliability of the digital portfolio to present a valid sample of the teacher candidate's best work.

Though these Nebraska school administrators felt that a digital portfolio can be an important tool to use in the teacher selection process, many in this sample were skeptical about trusting it solely. One respondent felt that someone other than the candidate seeking the teaching job could easily have developed the digital portfolio. One respondent declared,

“...anyone who believes that a digital portfolio cannot be manipulated, sterilized, developed by another person, etc. is misleading him/herself. There is no way to determine if the candidate has done the digital portfolio on his/her own anymore than there is a way to verify that what is shown as anecdotal evidence in the portfolio is authentic and representative.”

One administrator was less skeptical and commented,

“A digital portfolio is only one tool, just as an application, resume, and letters of reference are individual tools. The authenticity of each tool can be jeopardized. Each candidate wants and should show themselves in the best light. It is up to the interviewer to make a judgment regarding the degree to which the "tools" for evaluation match the candidate's true ability and predicted performance within the potential assignment.”

A method of insuring the reliability and validity of digital portfolios needs be developed. If colleges of education are going to begin using digital portfolios on a large scale for students to use in the teacher selection process, the colleges or universities may need to develop a system of validating the contents of a portfolio much similar to current services available from many credential preparing placement offices.

Administrators that responded to the survey in this study had very positive attitudes toward technology and felt they had good technology skills. One question on the survey asked if the respondent's technology skill was perceived to be a barrier when using a digital portfolio in the teacher selection process. The mean score of this survey question was 3.12, on a four-point scale with four representing no barrier. This indicates

that the LTTA cadre, in general, perceive themselves as competent with technology. This could be a result of the group that was surveyed. The LTTA group is a cadre of Nebraska school administrators that are being trained to use technology more effectively in the educational process. This particular group was the second of three groups to be trained. Each group is trained in a yearlong process. An assumption was made that those administrators that were really excited about technology would have been part of the first cadre, that the administrators that were most reluctant to use technology would be in the third year's cadre, and that the second year group would be a mixture of all levels of comfort with technology. The group was surveyed early in the training process with hope that they would not be influenced to a great deal by the instruction they were receiving.

Even with the adjustment of the two groups, a difference was noted. As perceived comfort or attitude to technology increased, so did willingness to use a digital portfolio in the teacher selection process. It does seem that in the training of school administrators, if one can improve attitudes toward technology administrators will be more willing to try new technology tools designed to assist them in their jobs.

Recommendations for Practice

The use of the digital portfolio as a tool to evaluate teacher candidate growth and development is becoming a common practice in many colleges of education (Barrett, 1999b; Carney, 2002; Milone Jr., 1995). A greater number of teacher candidates will be interested in using these digital portfolios to find teaching positions. Many school administrators are not opposed to using the digital portfolio to screen potential teachers,

in fact many welcome the opportunity to gather as much data as possible on a teacher candidate. Based on the findings of this study, the following recommendations for practice are made:

1. A prospective teacher candidate should consider the following contents for his or her digital portfolio:
 - Artifacts that demonstrate the ability to present one's self professionally
 - A resume
 - Artifacts that provide evidence of classroom management skills
 - Artifacts that provide samples of communication with parents
 - Artifacts that provide examples of field experience
 - The teacher candidate's philosophy of education
2. A teacher's digital portfolio should be clearly organized and easily searchable.
3. Administrators should be trained to access and use digital portfolios
4. A method of validating that the contents of the portfolio are the work of the teacher candidate should also be developed.

Limitations of the Study

This study should be considered exploratory. It studied one group of Nebraska administrators that are currently being trained to use technology more effectively. Participation in the LTTA cadre is voluntary and it can be assumed that the participants have an interest in gaining new skills with technology.

Another limitation is that the survey instrument used in this study was web-based and therefore had the potential to eliminate school administrators that had limited

knowledge of using a web-browser. The survey was also based on self-perception that may result in biased answers. Voluntary participation in the survey may have led to decreased participation. Finally, the survey used relied primarily on closed-response questions with limited opportunity open-ended responses.

Recommendations for Further Research

The use of digital portfolios in the teacher selection process is an emerging topic in education. This study was exploratory and gathered the perceptions of one group of administrators that were participating in technology training. Since this study was web-based and required the use of technology to complete, it should also be replicated using more traditional paper-based surveys. A paper-based survey could be mailed to all administrators in a state providing a broader range administrator comfort levels with technology.

This study was a snapshot in time of an emerging trend in education. As a greater number of digital portfolios are developed and used by teacher candidates it will be important to gather future perceptions of administrators that have actually used a teacher's digital portfolio in the teacher selection process.

This study was primarily quantitative. It may be important to select a group of administrators that have used digital portfolios and gather their perceptions in depth to discover new questions that need to be answered about how the digital portfolio can best be used in the teacher selection process.

Summary

The overall purpose of this study was to examine Nebraska School administrator's perceptions toward the use of the digital portfolio in the teacher selection process. This study was exploratory and while many of the school administrators that responded to the survey felt they had limited knowledge about how to use a digital portfolio in the teacher selection process, it was consistently clear that they felt that a digital portfolio could be a useful tool in this process. They felt while using that the digital portfolio would be more time consuming, it could assist in managing the teacher selection process. Furthermore they felt that a digital portfolio had the potential to make the task of selecting a teacher more efficient. Additionally they felt that a digital portfolio had the potential to provide valuable information about the prospective teacher. This is an exploratory study and as the use of digital portfolios becomes more common further research needs to be conducted.

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Appendix A Survey

Survey: Administrator Perceptions of Digital Portfolios in the Teacher Selection Process

Please answer the following questions about yourself by circling the answer or checking all that apply.

1. Which of the following best describes your district?
 - A. Urban
 - B. Suburban
 - C. Rural

2. Which of the following best describes the work setting in which you spend most of your time?
 - A. Public School
 - B. District School Administrative Office (K-12)
 - C. Private School

3. Which of the following best describes your administrative position?
 - A. Principal or Assistant Principal
 - B. Superintendent or Assistant Superintendent
 - C. Central Administration (coordinators, etc.)

4. Currently what are the grade levels of your school?
 - A. None
 - B. K-6
 - C. K-5
 - D. K-8
 - E. 6-8

F. 7-9

G. 9-12

H. 10-12

5. What is your gender?

A. Male

B. Female

6. How many years have you been an administrator?

A. 0

B. 1-5

C. 6-10

D. 11-15

E. 16-20

F. 21-25

G. 25-30

H. Greater than 30

7. How many years were you a teacher before becoming an administrator?

A. 0

B. 1-5

C. 6-10

D. 11-15

E. 16-20

F. 21-25

G. 25-30

H. Greater than 30

Please Use the following scale to rate the following statements.

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

8. I am no good with computers.

1 2 3 4 5

9. I would like working with computers.

1 2 3 4 5

10. I will use computers in many ways in my life.

1 2 3 4 5

11. Generally I would feel OK about trying a new problem on the computer.

1 2 3 4 5

12. The challenge of solving problems with computers does not appeal to me.

1 2 3 4 5

13. Learning about computers is a waste of time.

1 2 3 4 5

14. I don't think I would do advanced computer work.

1 2 3 4 5

15. I think working with computers would be enjoyable and stimulating.

1 2 3 4 5

16. Learning about computers is worthwhile.

1 2 3 4 5

17. I am sure I could do work with computers.

1 2 3 4 5

18. Figuring out computer problems does not appeal to me.

1 2 3 4 5

19. I'll need a firm mastery of computers for my future work.

1 2 3 4 5

Use the following scale to rate the following statements.

1. Strongly Disagree

2. Disagree

3. Neutral

4. Agree

5. Strongly Agree

20. I am not the type to do well with computers.

1 2 3 4 5

21. When there is a problem with a computer run that I can't immediately solve, I would stick with it until I have the answer.

1 2 3 4 5

22. I expect to have little use for computers in my daily life.

1 2 3 4 5

23. I am sure I could learn a computer language.

1 2 3 4 5

24. I don't understand how some people can stand so much time working with computers and seem to enjoy it.

1 2 3 4 5

25. I can't think of any way that I will use computers in my career.

1 2 3 4 5

26. I think using a computer would be very hard for me.

1 2 3 4 5

27. Once I start to work with the computer, I would find it hard to stop.

1 2 3 4 5

28. Knowing how to work with computers will increase my job possibilities.

1 2 3 4 5

29. I could get good grades in computer courses.

1 2 3 4 5

30. I will do as little work with computers as possible.

1 2 3 4 5

31. Anything that a computer can be used for, I can do just as well some other way.

1 2 3 4 5

Use the following scale to answer the following statements:

1. Strongly Disagree
2. Disagree
3. Neutral
4. Agree
5. Strongly Agree

32. I do not think I could handle a computer course.

1 2 3 4 5

33. If a problem was left unresolved in a computer class, I would continue to think about it afterward.

1 2 3 4 5

34. It is important to me to do well in computer classes.

1 2 3 4 5

35. I have a lot of self-confidence when it comes to working with computers.

1 2 3 4 5

36. I do not enjoy talking with others about computers.

1 2 3 4 5

37. Working with computers will not be important to me in my life's work.

Use the following scale to answer the following statements:

- a. Strongly Disagree
- b. Disagree
- c. Neutral
- d. Agree
- e. Strongly Agree

38. A digital portfolio would be a useful tool in the selection and screening of potential teachers.

39. A teacher candidate that creates a digital portfolio will be a better teacher than one that does not.

40. A digital portfolio can make managing teacher selection more efficient.
41. A digital portfolio can reliably depict a teacher candidate's skills in the classroom.
42. A digital portfolio can make it easier for the person selecting teachers to get a more complete picture of the candidate's skills.
43. A digital portfolio can demonstrate how the teacher candidate has developed over the years.
44. A digital portfolio can make it easier to validate a teacher candidate's references.
45. A digital portfolio can tell more about a candidate's skills than documents in a placement file.
46. A digital portfolio, when combined with an interview and college transcripts, can provide a complete picture of the teacher candidate.
47. A digital portfolio allows a teacher candidate to demonstrate technology skills more effectively.

Digital Portfolios and the Teacher Selection Process.

Please rate the items based on your perception of the usefulness in a teacher candidate's digital portfolio.

Let 4 be most important and 1 be least important.

Digital Portfolio Artifacts	Useful in a teacher candidate's digital portfolio
48. Resume (Bouas & Bush, 1994)	④ ③ ② ①
49. Certification and transcripts (Bouas & Bush, 1994)	④ ③ ② ①
50. Placement files (Bouas & Bush, 1994)	④ ③ ② ①
51. Philosophy of Teaching (Bouas & Bush, 1994)	④ ③ ② ①
52. Pre-service Clinical Experiences (Bouas & Bush, 1994)	④ ③ ② ①
53. Field experience evaluation summaries (Bouas & Bush, 1994)	④ ③ ② ①
54. Digital video clips of teaching experiences (Bouas & Bush, 1994)	④ ③ ② ①
55. Searchable table of contents	④ ③ ② ①
56. Formal teaching Units (Bouas & Bush, 1994)	④ ③ ② ①
57. National Teacher exam results (Bouas & Bush, 1994)	④ ③ ② ①
58. Block of detailed lesson plans (Bouas & Bush, 1994)	④ ③ ② ①
59. Samples of classroom work (digital photographs, scanned samples of P-12 student work, bulletin boards) (Bouas & Bush, 1994)	④ ③ ② ①

60. Samples of P-12 assessments of student work. ④ ③ ② ①
(Bouas & Bush, 1994)
61. Sample letters to parents (Bouas & Bush, 1994) ④ ③ ② ①
62. Evidence of effective communication skills ④ ③ ② ①
(Newman et al., 1993)
63. Samples of teacher-made materials (Newman et al., 1993) ④ ③ ② ①
64. Evidence of classroom management skills ④ ③ ② ①
(Newman et al., 1993)
65. Reflective statements on the learning process. ④ ③ ② ①
(Newman et al., 1993)
66. Evidence of content knowledge ④ ③ ② ①
67. Evidence of knowledge of learning theory and pedagogy ④ ③ ② ①
68. Samples of multimedia presentations ④ ③ ② ①
(PowerPoint, HyperStudio)(Barrett, 20011)
69. Hypertext links to teacher-made websites ④ ③ ② ①
70. Ability to present one's self professionally ④ ③ ② ①

Use the following scale to answer the following statements:

- a. Strongly Disagree
- b. Disagree
- c. Neutral
- d. Agree

Strongly Agree

71. I would be willing to use a teacher candidate's digital portfolio in the teacher selection process.

72. I would be more willing to interview a teacher candidate who has a digital portfolio than one that does not.
73. I would be willing to use a teacher candidate's digital portfolio if I could access it on a CD ROM.
74. I would be willing to use a teacher candidate's digital portfolio if I could access it on the Internet.
75. A barrier to using a digital portfolio is the lack of equipment it would take to access it.
76. A barrier to using a digital portfolio is the time it will take to assess the candidate's portfolio
77. I have the technological skills to use a digital portfolio to evaluate a teacher candidate's digital portfolio.
78. A barrier to using a digital portfolio is the technology support needed to effectively use a digital portfolio.
79. A barrier to using a digital portfolio is my knowledge about digital portfolios and how to use one in the teacher selection process.
80. I would take the time to use a digital portfolio in the teacher selection process.

Appendix B IRB Approval Letters

UNIVERSITY OF
Nebraska
Medical Center

NEBRASKA'S HEALTH SCIENCE CENTER
A Partner with Nebraska Health System

Institutional Review Board (IRB)
Office of Regulatory Affairs (ORA)

September 30, 2002

Paul Clark
COE, Kayser Hall 233
UNO - VIA COURIER

IRB#: 332-02-EX

TITLE OF PROTOCOL: Nebraska School Administrator Perceptions of Digital Portfolios in the Teacher Selection Process

Dear Mr. Clark:

The IRB has reviewed your Exemption Form for the above-titled research project. According to the information provided, this project is exempt under 45 CFR 46.101b, category 2. You are therefore authorized to begin the research.

It is understood this project will be conducted in full accordance with all applicable sections of the IRB Guidelines. It is also understood that the IRB will be immediately notified of any proposed changes that may affect the exempt status of your research project.

Please be advised that the IRB has a maximum protocol approval period of three years from the original date of approval and release. If this study continues beyond the three year approval period, the project must be resubmitted in order to maintain an active approval status.

Sincerely,

Ernest Prentice, PhD / EDP

Ernest D. Prentice, Ph.D.
Co-Chair, IRB

EDP/gdk

Appendix C Permission Letter

Thank you for your inquiry about the Computer Attitude Scale.

As you may know, Brenda Loyd, author of the CAS, was President of the National Council on Measurement in Education (NCME) at the time of her death in 1995. Dr. Loyd's co-author, Clarice Gressard, has asked me to handle all requests for permission to use their survey, and to provide the CAS survey and scoring protocol to researchers who wish to use their scale.

Therefore, in response to your inquiry, I am attaching a copy of the Loyd/Gressard survey of attitudes towards computers, in an MSWord document (survey.doc). If you have any problem reading it please let me know. Unfortunately I have no further information about the use of the CAS beyond that provided in this message and the attached document.

The survey is scored according to the following:

For questions 1, 3, 4, 6, 9, 11, 12, 14, 16, 17, 19, 22, 25, 27, 28, 30, 33, 35, 36, 38 (Strongly Agree=4, Slightly Agree=3, Slightly Disagree=2, Strongly Disagree=1).

For questions 2, 5, 7, 8, 10, 13, 15, 18, 20, 21, 23, 24, 26, 29, 31, 32, 34, 37, 39, 40 (Strongly Agree=1, Slightly Agree=2, Slightly Disagree=3, Strongly Disagree=4).

The questions are coded so that the higher the score, the more positive the attitude.

Four subscores can also be obtained from the questions.

Anxiety: 1, 5, 9, 13, 17, 21, 25, 29, 33, 37
 Confidence: 2, 6, 10, 14, 18, 22, 26, 30, 34, 38
 Liking: 3, 7, 11, 15, 19, 23, 27, 31, 35, 39
 Usefulness: 4, 8, 12, 16, 20, 24, 28, 32, 36, 40

Again, higher scores correspond to more positive attitude, e.g., a higher confidence score means more confidence and a higher anxiety score means less anxiety.

Permission is granted for use of this scale. In any publications arising from its use, please be sure to credit the authors, Brenda H. Loyd and Clarice P. Gressard.

Thanks for your interest. Best wishes.

Doug Loyd

Attachment: Survey.doc (MSWord)

--

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