Teacher candidates' perceptions of traditional classroom assessments and electronic portfolio classroom assessments

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TEACHER CANDIDATES' PERCEPTIONS OF TRADITIONAL CLASSROOM ASSESSMENTS AND ELECTRONIC PORTFOLIO CLASSROOM ASSESSMENTS

By

Robert L. Goeman

A DISSERTATION

Presented to the Faculty of
The Graduate College at the University of Nebraska
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For the Degree of Doctor of Education

Major: Educational Administration
Under the Supervision of Dr. Laura Schulte

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Electronic portfolio assessment is becoming an important means to demonstrate competency in an authentic way in higher education. Across the country, a number of schools are turning to electronic portfolio classroom assessment to help evaluate teacher candidates' progress in becoming a teacher. To be successful according to accreditation agencies, Colleges of Education must demonstrate candidate progress through the use of assessment data that reflect individual programs and the college's conceptual framework.

The purpose of this study was to determine if there are differences in teacher candidates' perceptions of the contributions of traditional classroom assessments and electronic portfolio classroom assessments to the candidates' development of their understanding of education core content areas and the use of reflections. The secondary purpose of this study was to determine teacher candidates' knowledge of Interstate New Teacher Assessment
and Support Consortium (INTASC)(1992) principles given hours spent within the traditional and electronic portfolio classroom assessments.

Data were gathered and analyzed through a web-based online survey during the 2006 fall semester. 73 teacher candidates completed all of the required data and were included in the study. Data were analyzed using descriptive statistics, t-tests, Pearson $r$, and two-way analyses of variance.

The results found that when comparing hours spent working on the electronic portfolio, those teacher candidates who spent more time had significantly higher content perception scores than those who did not spend as much time on the electronic portfolio. Also, there was a statistically significant difference between the elementary and secondary levels for reflection perception scores for electronic portfolio classroom assessment with elementary level teacher candidates being more positive.

This study provided additional insight into teacher candidates' perceptions of traditional classroom assessment and electronic portfolio classroom assessment. It also led to a better understanding of teacher candidates' self-assessment of their knowledge of the INTASC (1992) principles.
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Chapter 1

Introduction

Portfolios have been evolving over many years from artists showcasing the development of their art to investors keeping track of their stocks and bonds. Educators have also needed a way to show knowledge of their understanding of the pedagogy of teaching. Both paper-based and electronic portfolios are being widely used in Colleges of Education as teacher candidates prepare documentation to show competency in teaching standards. Portfolios can be records of learning, growth, and change. They can also be used for internal or external assessment and presentation purposes. They are extraordinarily diverse. As Yancey (2001) suggests in Portfolios in the Writing Classroom, portfolios can function as cultural artifacts, as collection devices, as instruments of process, as assessment tools, as means of education reform, as resources for teachers, and as pictures of and guides for curriculum.

Purpose Statement

The purpose of this study was to determine if there are differences in teacher candidates' perceptions of the contributions of traditional classroom assessments and electronic portfolio classroom assessments to the
candidates' development of their understanding of education core content areas and the use of reflections. The secondary purpose of this study was to determine teacher candidates' knowledge of Interstate New Teacher Assessment and Support Consortium (INTASC)(1992) principles given hours spent within the traditional and electronic portfolio classroom assessments.

Definitions of Terms

An electronic portfolio is a purposeful collection of artifacts that exhibits the teacher candidates' efforts, progress, and achievements in a digital form over time. Teacher artifacts include projects or performance on tasks with predetermined standards, criteria, and indicators that are evaluated by faculty (Barrett, 2001; Milman, 2005).

Traditional classroom assessments are norm or criterion-referenced paper and pencil tests that include selected response (multiple choice, true/false, matching and fill in the blank), essays, oral examinations, class discussions, journals, performance assessments, projects, and exhibitions that are evaluated by faculty.

Classroom Assessment Perception Survey (CAPS) is the name of the survey used in this study to gather data from teacher candidates.
A teacher candidate is an undergraduate college student seeking teaching licensure.

The Interstate New Teacher Assessment and Support Consortium (INTASC) is a consortium of state education agencies, higher education institutions, and national educational organizations dedicated to the reform of the education, licensing, and on-going professional development of teachers. INTASC's mission is to promote standards-based reform through the development of model standards and assessments for beginning teachers. INTASC (1992) has developed 10 principles (see Appendix A) that describe what a beginning teacher should know and be able to do (Ambach, 1996).

Limitations

This study was exploratory in nature and primarily related to the institution where the study was conducted. Using the teacher candidates' perceptions and not looking at performance data of the traditional assessment or electronic portfolio assessment limited this study. Exposure to the electronic portfolio assessment is required, but has been implemented in phases over the last 5 years. Small changes have also created differences in the portfolio experience as program evaluation has taken place.
Although the same syllabus and curriculum have been utilized, teacher candidates completed the teacher preparation program through different tracks with different faculty, which was another limitation. Even though exposure to both assessments occurred, it was impossible to match teacher candidates' experiences from one section of a course to another.

**Delimitations**

This study was delimited to teacher candidates enrolled in student teaching during the 2006 fall semester at a Midwestern metropolitan university.

**Assumptions**

For the purpose of this study, it was assumed that all teacher candidates had access to the Internet and anonymously answered the survey truthfully and accurately. All teacher candidates were asked to complete the survey but not required to do so. Another assumption was that the data collection instrument was valid and reliable within the context of this study.

**Research Questions**

To guide the inquiry, the following research questions were posed:

1. What are teacher candidates' CAPS content and reflection perception scores for traditional classroom
assessment and electronic portfolio classroom assessment?

2. What are teacher candidates' INTASC perception scores?

3. Is there a significant positive relationship between teacher candidates' CAPS content and reflection perception scores and their INTASC perception scores?

4. Is there a significant difference between elementary and secondary teacher candidates' INTASC perception scores?

5. Is there a significant relationship between time spent working on the electronic portfolio and teacher candidates' INTASC perception scores?

6. Is there a significant relationship between level (elementary and secondary) and type of assessment (traditional classroom and electronic portfolio) on teacher candidates' CAPS content and reflection perception scores?

7. Is there a significant relationship between time spent working on the electronic portfolio and type of assessment (traditional classroom and electronic portfolio) on teacher candidates' CAPS content and reflection perception scores?
Significance of the Study

With assessment, standards, and information technology being a vital component of the K-12 schools, higher education is feeling even more pressure to prepare teacher candidates for their future classrooms to enhance their students' education (Yinger & Nolen, 2003). The University of Nebraska at Omaha (UNO) College of Education has embarked on a 5-year plan to institute a Comprehensive Assessment System of Candidate Preparation. College faculty, staff, and students are currently utilizing computer-based, data collection, organization, and analysis schemes to serve two main purposes. First, the system is providing electronic portfolios for teacher candidates that will track performance and completion of learning outcomes across their professional preparation. Second, the system is providing group data that may be used for program evaluation, review, and revision (University of Nebraska at Omaha, 2001).

To be successful according to accreditation agencies, the Colleges of Education must demonstrate candidate progress through the use of assessment data that reflect individual programs and the college's conceptual framework. The college must use the data in a systematic matter over time to improve the courses and programs (NCATE, 2002).
All initial programs use the INTASC (1992) principles as part of their conceptual frameworks; and both initial and advanced programs utilize their national, state, and institutional standards in defining competencies and dispositions expected of their candidates. Finally, the data must document K-12 students' progress as teacher candidates impact them. Higher education institutions must be able to make appropriate decisions about the use of electronic portfolios within the teacher preparation program (Cambridge, Kahn, Tompkins, & Yancey, 2001).

During the capstone experience (student teaching), cooperating teachers are asked to evaluate teacher candidates' knowledge of subject matter in preparing learning experiences. Candidates themselves are asked to self-evaluate their preparedness on the same criteria. All evaluations are reviewed by the university supervisor and incorporated into a final evaluation of the teacher candidate. All evaluations are based on the INTASC (1992) principles.

There has been very little research in the area of teacher candidate perceptions and data analysis. Because this is an emerging issue in education, and especially in post-secondary education, it is important for teacher preparation institutions to get in-depth information from
different perspectives. There is a call for universities to assess teacher candidates' knowledge of INTASC (1992) principles. Another area of need is the ability to measure teacher candidates' perceptions of assessments based on content and reflection.

College of Education programs across the country are trying to make decisions about the significance of establishing an electronic portfolio within their program (Delandshere & Arens, 2003). A study of the perceptions of teacher candidates based on INTASC (1992) principles and assessments is pertinent to the future of teacher candidates in their preparation of becoming a certified classroom teacher. Of equal importance is the college's creation of an atmosphere of learning and assessment.

 Colleges around the globe are looking for research that documents success or failure of assessment strategies.

Organization of the Study

The literature review relevant to this study is presented in Chapter 2. This chapter reviews literature regarding electronic portfolio assessment uses in teacher preparation programs. Chapter 3 describes the research design, methodology, and procedures that were used to gather and analyze the data of this study. An analysis of the data is discussed in Chapter 4. Finally, Chapter 5
includes the researcher's analysis and interpretation of the results as well as conclusions and recommendations.
Chapter 2

Review of the Literature

This literature review contains information in five main areas: (1) histories of traditional assessment and Interstate New Teacher Assessment and Support Consortium, (2) paper and electronic portfolio assessments, (3) current impact of portfolios, (4) characteristics of portfolios, (5) and UNO's College of Education Electronic Portfolio. Throughout this literature review, the transition of traditional portfolios to electronic portfolios will be discussed.

Literature is very sparse in the area of students' perceptions of portfolios. Research literature currently speaks to the many benefits and limitations of an electronic portfolio, but very little literature was found that asked teacher candidates how they view the usefulness of the electronic portfolio assessment tool or perceived understanding of the Interstate New Teacher Assessment and Support Consortium (INTASC)(1992) principles.

History

Traditional classroom assessment. Historically, traditional classroom assessments were intended to measure point in time skills and facts (Schackelford, 1996). The assessments consist of norm-referenced or criterion-
referenced paper and pencil tests that may include selected response (multiple choice, true/false, matching and fill in the blank), essays, oral examinations, class discussions, journals, performances, and individual or group projects.

As assessments have become more authentic, they focus on teacher candidates' thinking, innovation, and creativity (Schackelford, 1996; Shelly, 2002). Traditional assessments should be more than drill and recalling facts. If traditional assessments are thoughtfully created and used in the classroom curriculum, they can help to improve the instructional quality of the school. Stiggins (2002) remarks that standardized tests are not the answer; rather ongoing assessments can provide more information on a daily basis while still creating a learning environment. He advises that a yearly exam cannot give teachers the moment-by-moment information that they need to help students learn.

Traditional assessments continue to take place in classrooms all over the nation. Strudler and Wetzel (2005) remarked that the transformation from traditional assessment toward authentic assessment continues to be a gradual process. As standards are being implemented, different approaches of assessment are being implemented in the classroom.
INTASC. The need to have consistent career development across state boundaries of teacher candidates led to the creation of principles to guide what all beginning teachers should know and be able to do. The INTASC (1992) principles were created in 1987 by the Council of Chief State School Officers. The main purpose of the development of the INTASC principles was to create model-licensing standards for teachers (Ambach, 1996). A committee of teachers, teacher educators, and state agency officials developed the principles. Collectively, they shared a vision of what constitutes competent teaching. These principles are now being changed into standards for different subject matter (INTASC, 1992).

INTASC (1992) presented the standards in the form of 10 principles (see Appendix A). Each principle has further explanation in terms of underlying knowledge, dispositions, and performance skill indicators. The core standards were designed to describe what first year teachers should be able to do at the time they begin working in the profession and to represent what students should understand in order to meet subject standards in K-12 (Ambach, 1996; INTASC, 1992).

INTASC (1992) principles are applied in traditional and electronic portfolio classroom assessments. Each
teacher candidate has the opportunity to build on the knowledge, dispositions, and performances while doing activities within the traditional classroom as well as within the electronic portfolio. According to Hill (2003), it makes sense to organize portfolio artifacts around INTASC (1992) principles. This way the program can document achievement based on the standards set by the assessment plan.

_Paper and Electronic Portfolio Assessment_

Traditional paper portfolios started out as a hard copy collection of artifacts organized in a linear direction created for evidence of learning. The use of portfolios in the education process came about in the late 1980s. With the help of the Teacher Assessment Project at Stanford, portfolios became an alternative assessment model for authentic assessment (Wolf, 1991). Teacher candidates usually put together a paper portfolio for each course or a certain year in their program (Love, McKean, & Gathercoal, 2004). Collected hard copy artifacts could include classroom activities or awards that were obtained during the time of each individual portfolio. According to Love et al. (2004), teacher candidates choose artifacts based on their own judgment with very little guiding criteria. The artifacts are generally arranged in time order sequence and
tell a story about a teacher candidate's academic growth over time.

Over the years, paper portfolios have been held in captivity in several different enclosures. Some of these enclosures include: double pocketed folders, large boxes, accordion files, and three-ring binders (Schackelford, 1996; Wetig, Topp, & Clark, 2005). Each enclosure provides the opportunity for teacher candidates to collect artifacts of diverse educational understandings.

High school teachers at Wayland Union High School in Wayland, Michigan expressed how well they liked paper portfolios because they provided high school students with the opportunity to revise their writings while seeing past versions for comparison. In addition, administrators liked the idea due to the repository of writings that meet state-mandated tests. Overall, the better the students were at keeping the documentation, the larger the folders became. In turn, the documentation became more ineffective. The ineffectiveness was caused by the plethora of documents stored without being able to organize them as well as the inability to be assessed by different audiences (Diehm, 2004).

Throughout higher education, feedback to paper portfolios is limited to a few comments from the instructor
or lead portfolio examiner. Many times, students are isolated and unaware of what other students have placed in their paper portfolio. As Barrett (1998) points out, paper portfolios are also static. Paper portfolios cannot be duplicated very easily nor are they able to be shared with more than one person at any given time.

As trends towards performance-based assessments have increased, so has the integration of technology within the classroom. As a result, electronic portfolios have begun to evolve (Georgi & Crowe, 1998). At a growing number of teacher education programs, electronic portfolios are being mandated. Salzman, Denner, and Harris (2002) found that 89% of Colleges of Education report using some type of portfolio for assessment. Strudler and Wetzel (2005) looked at the proceedings of the Society of Information Technology and Teacher Education (SITE) and found electronic portfolios were the main topic of 52 papers in 2003 and 56 papers in 2004. While this researcher found 38 titles with the main topic of portfolios in papers published for SITE in 2005 and 40 titles in 2006.

Electronic portfolios serve three main purposes in a teacher candidate's career: a formative assessment portfolio, a summative assessment portfolio, and a marketing portfolio. A formative assessment portfolio is
usually at the beginning of a teacher candidates' program. It includes documentation toward achieving different criteria required by the program. The formative assessment portfolio includes assessments that are ongoing within the structure of each class. Some assessments are based on standards while others demonstrate content curriculum. A formative artifact may provide teacher candidates the necessary feedback to help improve their knowledge of a standard. The summative assessment portfolio shows accomplished artifacts that meet standards set by the program. It is more refined showing final stage defined artifacts. The third type is the marketing portfolio where best works and reflections are displayed. Full mastery should be demonstrated for finding a full-time teaching position. Many times, only the final portfolio is available for potential employers to view (Love et al., 2004; Lynch & Purnawarman, 2004; Reis & Villaume, 2002; Treuer & Jenson, 2003).

At different stages and decision points, teacher candidates gather artifacts such as written projects, papers, and evaluations to demonstrate engagement with and mastery of skills. From paper portfolios to electronic portfolios, much of the content has not changed, but instead has been digitized and referenced from different
points of the electronic portfolio. New content has also been added because of the ability of the portfolio system to store the artifact for future reference. At higher education institutions, classroom work has always been part of the portfolio process. Students should not only collect their best work, but also show a representation of all of their work for examiners of their portfolio to see teacher candidate progress over time (Britten & Mullen, 2003; Delandshere & Arens, 2003).

The role of standards is continuing to help drive the need for authentic assessment. Portfolios are being framed around standards from national organizations. Some of the national organizations include: Interstate New Teacher Assessment and Support Consortium (INTASC), International Society for Technology in Education (ISTE), National Board for Professional Teaching Standards (NBPTS), National Council for Accreditation of Teacher Education (NCATE), American Association for Higher Education (AAHE), and American Association of Colleges for Teacher Education (AACTE) (Delandshere & Arens, 2003). Portfolios are being considered the preferred method of assessment to meet the criteria set forth by the national organizations in the area of teaching. NCATE requests an assessment plan to be an indicator of performance for teaching programs. Because
of the standards movement, teacher preparation programs use portfolios to prepare teacher candidates for licensure and to meet NCATE requirements (Strudler & Wetzel, 2005). As Barrett (2001) said,

I propose that a portfolio without standards is just a multimedia presentation or a fancy electronic resume or a digital scrapbook. Without standards as the organizing basis for a portfolio, the collection becomes just that...a collection, haphazard and without structure; the purpose is lost in the noise, glitz and hype. (p. 2)

Once the standards are agreed upon, the artifacts represent the standards. Faculty ask three important questions when looking at portfolios: (1) What is the artifact? (2) How does it relate to this particular standard/principle? (3) What does it say about teacher candidates’ growth and competence? (Campbell, Cignetti, Melenyzer, Nettles, & Wyman, 2000)

Current Impact

Benefits. The digital portfolio offers many benefits to teacher preparation programs. The most referenced benefit is the teacher candidates’ increased participation in reflection as well as a higher writing skill level. In
an exit portfolio survey, Reis and Villaume (2002) commented that 89% of the teacher candidates marked “strongly agree” or “agree” that they had an opportunity within the portfolio to reflect.

Development of practical skills within the electronic portfolio is another benefit expressed by Reis and Villaume (2002). The authors interviewed a cooperating teacher who expressed how the electronic portfolio kept her student teacher more focused and organized. Converting teacher candidate work into digital format also provides new and innovative ways to help students organize and search through their electronic portfolios (Ahn, 2004).

Getting a full-time teaching job is always a concern after graduating. Certain electronic portfolios cater to the needs of teacher candidates preparing themselves to look for jobs. Strudler and Wetzel (2005) investigated six different higher education institutions and found that one of the main benefits for teacher candidates was the ability to market themselves better to future employers. The primary audience includes school district principals and human resource officers. Treuer and Jenson (2003) remark that the value of a marketing portfolio is self-evident. In many cases, the artifacts are chosen and changed based on the electronic portfolio’s audience.

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Another benefit of an electronic portfolio is tighter integration of curricular standards. Creating performance-based artifacts is one way that teacher candidates meet curricular standards. Performance-based artifacts describe what teachers should know and be able to do from the moment they enter the teaching profession (Ambach, 1996). National and state standards are also supported in a single portfolio system for a variety of best educational practices. Barrett (1998) maintains that electronic portfolios are an attractive method of alternative student assessment. There is a need to correlate student performance to state or national standards as well as document the achievement of specific standards by linking them to specific artifacts.

Elimination of storage problems compared to traditional paper portfolios is the most beneficial component of an electronic portfolio (Gathercoal, Love, Bryde, & McKean 2002). Students can link artifacts to other artifacts within the same system or link outside to other resources they have found or created. When the portfolio is in a central repository, it gives teacher candidates the ability to share their portfolio simultaneously with peers, faculty, or potential employers who can view it at their convenience. Sharing portfolios is now much easier because
faculty do not have to be in the same place at the same
time to view a student's portfolio (Ahn, 2004; Greenberg,
2004). The Internet has given the capability to view portfolios anywhere and anytime.

A compounding benefit of increased storage space and accessibility allows teacher candidates to reorganize and present their portfolios to different audiences based on the purpose (Ahn, 2004; Greenberg, 2004; Herner, Karayan, McKean, & Love, 2003). Creative thinking and collaboration with other teacher candidates enhance a teacher candidate's ability to improve his or her artifacts over time. Teacher candidates can connect to peers and professionals around the globe at any time and any place. Teacher candidates can also solicit feedback of their artifacts before submitting them for final approval (Gathercoal et al., 2002).

Challenges. Several challenges are faced in the implementation of electronic portfolios. The first challenge is finding a starting point. Many higher education institutions have paper portfolios in place. The transition to electronic portfolios seems like an overwhelming task. Ittleson (2001) agrees that this transition is a daunting task and adds to the difficulty that faculty have in agreeing on what students should
include in their portfolio for formal assessment and evaluation record.

Training issues are also a primary concern. Many institutions are attempting to infuse technology into the teaching and learning of the curriculum (Gatlin & Jacob, 2002). Not only do the faculty need training on how students should utilize electronic portfolios, students need to see modeling of the electronic portfolio systems in the selection of artifacts and different ways of presenting information to various audiences. If rubrics are being developed and implemented within a portfolio, then all graders must be trained to complete the assessments in a similar way without bias toward the artifact chosen to represent a certain standard (Hill, 2003; Wiedmer, 1998).

Another challenge among portfolio developers is creating the opportunity for all parties to buy in to an electronic portfolio system. Communication at all levels is required for successful implementation and future progress. Higher education institutions strive to develop a culture where faculty promote similar beliefs about teacher candidate success (Gathercoal et al., 2002; Topp & Clark, 2006). The electronic portfolio conceptual design and framework may be the hardest part on which to agree. Whether it is top-down or bottom-up, strategies must be
agreed upon for an electronic portfolio initiative to be successful.

As electronic portfolios grow over time, they begin to grow in size and complexity. Never are all of the necessary requirements in place in the initial phase of development (Jafari, 2004). New courses added in the electronic portfolio as well as changing needs within the curriculum increase the complexity as well as the maintenance of an efficient system.

Administration and faculty need to address the additional amount of time needed to assess electronic portfolios. Quatroche, Duarte, Huffman-Joley, and Watkins (2002) understand that the time required for faculty to read the portfolios and evaluate the performance of each individual teacher candidate is much greater than the traditional classroom assessments. Faculty and administration at John Hopkins University commented on the massive amount of time needed to grade the portfolios (Strudler & Wetzel, 2005). Not only does it take a massive amount of time at the end of the experience, but also at checkpoints along the way to ensure that teacher candidates are achieving at all places within the curriculum.

The difficulty of mastering the technology accounts for another challenge. Wright, Stallworth, & Ray (2002) did
a pre - post survey with one set of questions being directed at whether technology was worth integrating into the methods block. Ninety-two percent indicated yes at the pre survey, 88% at the post survey. Even though the percentages were high, one student remarked, "integrating technology is very time consuming with all of the other examinations, papers, etc..." (Wright et al., p. 55). Another student wrote, "In order to prepare students for entry into the workplace, they must be accustomed to technology instruments while they are still in school" (Wright et al., p. 56).

Characteristics

Content. Electronic portfolios are gaining popularity as educators and business people alike are discovering their benefits as a means of validating individual performance (Wise, 1996). Aided by technology, individuals can develop portfolios by electronic means and create, store, and manage both products and processes for inclusion in working, showcase, documentation, and process portfolios. The new technologies make it possible to show, in ways that were not available before, what students and professionals working in the field know and can do. Digital portfolio software can be used to create a multimedia
collection of student work and to connect that work to performance standards (Wiedmer, 1998).

Darling-Hammond (1997) wrote, "Teachers need deep understanding of subject matter, of approaches to student learning, and of diverse teaching strategies if they are to develop practices that will allow students to meet the new standards" (p. 196). Although faculty can use the electronic portfolio for a single course, when more courses are used, students have a greater awareness of the content of all of the courses (Gathercoal et al., 2002). Students do not see the courses as being isolated.

Content is the most important part of a professional portfolio (Gathercoal et al., 2002). Hewett (2004) comments that professors, through observation of the student learning, recognized that the electronic portfolio helped increase student knowledge about the content area. Student learning became more interactive rather than passive listening and memorizing.

Content should be organized around standards if the teacher preparation program is to document efforts of faculty and teacher candidates (Hill, 2003). The electronic portfolio will have many different requirements for artifacts chosen by the institution. The teacher candidate will choose artifacts as examples that highlight growth and
competence. Quatroche et al. (2002) noted that portfolios provided an opportunity to see what teacher candidates have learned as well as where teacher candidates have misconceptions about the content. They found that faculty thought that portfolios gave them a more complete picture of what teacher candidates could do well.

From the student’s perspective, Zidon’s (1996) research stated that students at first did not like the portfolio requirements, but after going over the artifacts with faculty and peers, they began to value what the portfolio taught them about their own knowledge of the content. Assembling the artifacts in a meaningful way helped teacher candidates concentrate on their organizational and analytical skills (Gatlin & Jacob, 2002; Milman, 2005).

Reflection. In order for assessments to be complete, portfolios must consist of more than a collection of artifacts. They must contain some reflection on past performance, current strengths, and future growth (Heath, 2002).

Reflection requires teacher candidates to answer the question, “What did I learn?” (Heath, 2002). Answering this question creates ownership and identification of the assessment or artifact. Using reflection, teacher
candidates can describe incidents from field experiences or student teaching that provide insight about what they learned from the activity (Hurst, Wilson, & Cramer, 1998). Growth of the teacher candidate over time is also an important contribution of reflection. Teacher candidates provide information about how their professional growth has changed throughout the program.

Reflection is not new to education practices. Dewey (1933) is acknowledged as the originator of reflection and provided a comprehensive description when he wrote of reflective thinking as the "active, persistent, and careful consideration of any belief or supposed form of knowledge in light of the grounds that support it" (p. 9). Since that time, Schon (1987) has added to Dewey's reflective ideas by suggesting that teachers can change their instructional practices only if they have the knowledge and skills to make the necessary analysis in a thoughtful manner.

Research by Davies and Willis (2001) showed how students viewed the electronic portfolio as helping to develop their reflection skills. They said, "Students stated that the processes encouraged them to think about their readiness to student teach and made them aware of their professional growth" (p. 32).
Strudler and Wetzel (2005) found the level of reflection differed across the six sites that they researched. At some sites, it was a formality. Teacher candidates wrote about the artifact and faculty checked to make sure something was written. At other sites, teacher candidates explained a theoretical model that required artifact analysis at a very high level. At this level, faculty felt that reflection was very important for both the candidate and the portfolio process.

Teaching and learning the practice of reflection appears to be a very high need area. According to Zidon (1996), faculty may need to prompt students with questions that promote more accurate self-reflection. Strudler and Wetzel (2005) found a senior faculty person who did not think that it appeared that teacher candidates were emphasizing reflection very much. It appeared teacher candidates were hurrying to get their portfolios finished. It takes time to correctly complete electronic portfolios.

"However, an increasing number of institutions are moving toward authenticated demonstration of competencies, along with a belief that student reflection is central to learning" (Ittelson, 2001, p. 44). AAHE also emphasizes that the purpose of an electronic portfolio is for

UNO's College of Education Electronic Portfolio

Performance assessment entails movement away from traditional curricula and assessment to achieve more authentic, "real world" ways of verifying the preparedness of education graduates (Britten & Mullen, 2003). Digital portfolios by teacher education majors have brought a new challenge in the assessment of digital products for institutions of teacher education nationwide. The University of Nebraska at Omaha's College of Education has taken on that challenge.

The primary purpose of the UNO's College of Education Electronic Portfolio is to enhance the learning of the teacher candidates. The electronic portfolio is a repository for products from activities throughout a teacher candidate's coursework. Much focus has been placed on the Educational Core (EDUC) sequence classes taught within the Teacher Education Department by both full-time and part-time faculty. The EDUC courses consist of Human Growth and Learning, Educational Foundations, Human Relations, Applied Special Education, and Instructional Systems. These five courses are the professional core requirements for all teacher preparation programs (Wetig et
al., 2005). Each course has an INTASC (1992) principle that corresponds with a required assessment showing teacher candidates' understanding and reflection. In these courses, products reveal the quality and level of learning as well as provide opportunities for reflection within many of the activities.

The College of Education has been making use of a student electronic portfolio for one form of assessment of teacher candidates. All undergraduate teacher candidates have been using parts of the portfolio since the fall of 2001. Many different artifacts are completed in the formative electronic portfolio throughout a participant's coursework, but only certain artifacts are required to be included in the summative portfolio. College of Education faculty have voted and designated certain artifacts that reflect the INTASC (1992) principles to be available in each teacher candidate's summative portfolio. While teacher candidates are completing certain courses, they submit their artifacts electronically to the faculty for review. Each faculty member from each course determines if the artifact is deemed acceptable for inclusion in the summative portfolio. Once the artifact has been deemed acceptable, the artifact is included in the appropriate INTASC principle matrix box.
Conclusion

Electronic portfolio assessment is becoming an important means to demonstrate competency in an authentic way in higher education. This study will help contribute to the need to better understand the teacher candidates' perceptions of traditional classroom assessment in comparison to electronic portfolio classroom assessment. It will also help to better understand teacher candidates' self-assessment of their knowledge of the INTASC (1992) principles.
Chapter 3

Methodology

This chapter provides a description of the methods used in this study. Topics include the purpose, research design, participants, description of procedures, instrumentation, variables, research questions, data analysis, and Institutional Review Board information.

Purpose

The purpose of this study was to determine if there are differences in teacher candidates' perceptions of the contributions of traditional classroom assessments and electronic portfolio classroom assessments to the candidates' development of their understanding of education core content areas and the use of reflections. The secondary purpose of this study was to determine teacher candidates' knowledge of Interstate New Teacher Assessment and Support Consortium (INTASC)(1992) principles given hours spent within the traditional and electronic portfolio classroom assessments.

Research Design

The survey method was the design used in this study. A survey was used to quantitatively describe and examine the teacher candidates' perceptions of the INTASC (1992) principles and collect teacher candidates' perceptions of
the development of their understanding of education core content areas and use of reflections within classroom assessments. All of the information was collected through a web-based survey. Of the respondents, 98.6% replied that they had access to the Internet outside of the campus. This allowed for a rapid collection of information from a group of students who did not attend campus on a regular basis.

Participants

The participants included teacher candidates who attended a Midwestern metropolitan College of Education during the fall 2006 semester. Of the 143 eligible respondents, a total of 73 (51.0%) teacher candidates completed the survey. Of the 73 respondents, 58 (79.5%) were female, and 15 (20.5%) were male; 66 (90.4%) were Caucasian, and 7 (9.6%) were from minority groups; 48 (65.8%) ranged in age from 20 to 24, 13 (17.8%) ranged in age from 25-29, and 12 (16.4%) were 30 or older. The participants were first bachelor’s degree undergraduate teacher certification candidates enrolled in their student teaching experience. The student teaching experience occurred in the final semester of a teacher candidates’ coursework.

Teacher candidates from all certification levels and endorsement areas were represented. The sample included
both elementary and secondary teacher candidates who would be certified in many different subject and field endorsement areas. Of the respondents, 41 (56.2%) had elementary certification, 27 (37.0%) had secondary certification, and 5 (6.8%) K-12 certification.

**Description of Procedures**

The Field Placement Advisory Board and the staff who oversee student teacher candidate placements were contacted to gain their written approval to distribute the initial invitation to participate in the Classroom Assessment Perception Survey (CAPS). The initial invitation was sent to all teacher candidates registered for student teaching in the 2006 fall semester. The Field Experience coordinator sent a follow-up email invitation. In addition, the survey was listed on the student teacher calendar of events and the course management system.

The invitation to participate in the study was sent to the teacher candidate's university email address using the researcher name and the Office of Student Services. The email was an exact duplicate of the cover letter found in Appendix B. The email contained a link for teacher candidates to complete demographics, the knowledge of INTASC (1992) principles, and CAPS online. All survey data were posted electronically to a protected web server.
**Instrumentation**

The CAPS survey gathered data in three main areas. The first set of data included the teacher candidates' demographics. Demographic information included: gender, ethnicity, age, certification level, Internet access, technology proficiency, number of courses involved with at UNO that used the digital portfolio, and average hours spent within the electronic portfolio classroom assessment.

The second set of data included the teacher candidates' rating of themselves on the knowledge represented by INTASC (1992) principles evaluated on a 5-point Likert scale. Each principle was listed and the teacher candidates chose the most appropriate response from the following: very low, low, average, high, or very high knowledge.

The third set of data included responses to CAPS which contained two parts. Part one asked questions based on teacher candidates' understanding of course content while the second part asked questions based on support of reflection. Teacher candidates responded to both parts using a 5-point Likert scale (strongly disagree, disagree, undecided, agree, and strongly agree).

**Validity.** Two processes established the content validity of the research instrument. First, an extensive
review of the literature on traditional assessments, INTASC (1992) principles, and electronic portfolios was completed. A group of experienced educational professionals were presented with the INTASC (1992) principles and asked to develop classroom assessment questions that would correspond with each INTASC (1992) principle. In total, the item development panel developed 93 items. Overall, the group of professionals who took part in the process had 231 years of experience in the education profession. Second, a panel of experts reviewed the CAPS questions. The panel included faculty who have been involved in using an electronic portfolio in their classroom as well as others who have implemented the INTASC (1992) principles in their classrooms. Overall, the group of faculty who took part in the process had 262 years of experience in the education profession. Another person on the panel was a Senior Research Associate at WestEd Education Laboratory. As part of the content validation process, the members of the panel were asked to determine if the items on the CAPS were appropriate and represented the INTASC (1992) principles. They rated each item on a Likert scale. The mean score was found for each item, and then each item was ranked from lowest to highest. Based on this process, 49 items were retained.
Pilot study. The first pilot study was used to determine the constructs measures by the CAPS and reliability of CAPS. The first pilot group included 113 teacher candidates who completed a paper and pencil version of the survey.

The second pilot group was used to ensure the accuracy of electronic submission and to gain input for program evaluation. The second group consisted of 44 teacher candidates surveyed during their completion of methods courses. This survey took place before the teacher candidates completed their student teaching.

Reliability. The initial factor analysis and corresponding scree plot indicated that a two-factor solution fit the data. This held true in both the first and second pilot groups. In the first pilot group, the first factor (content area subscale) had an eigenvalue of 27.01 and accounted for 55.12% of the total variance. The second factor (reflection subscale) had an eigenvalue of 2.24 and accounted for 4.57% of the total variance. From the second pilot group, the first factor (content area subscale) had an eigenvalue of 25.81 and accounted for 52.67% of the total variance. The second factor (reflection subscale) had an eigenvalue of 2.85 and accounted for 5.82% of the total variance. In total, the two factors accounted for
approximately 60% of the variance in CAPS responses for the first pilot group and 58% for the second pilot group.

The reliability of the instrument was estimated using Cronbach's alpha. It was computed for the first and second pilot groups to see if participants were consistent across their responses on CAPS. For the first pilot group the reliability estimates on the content area and the reflection subscale were both .96. For the second pilot group, the reliability estimate on the content area subscale was .97; the reliability estimate on the reflection subscale was .92. After making changes based on the factor and reliability analyses, CAPS included 37 items (see Appendix B).

Variables

The variables in this study included three independent and three dependent variables. Descriptions of each of the independent and dependent variables are listed below:

Independent variables. The independent variables are defined as:

1. Type of assessment (traditional classroom or electronic portfolio);
2. Current Certification (Elementary or Secondary);
3. Hours spent working on the electronic portfolio in each course.
Dependent variables. The dependent variables are defined as the teacher candidates' perception scores on the:

1. Content area subscale;
2. Reflection subscale;

Research Questions

To guide the inquiry, the following research questions were posed:

1. What are teacher candidates' CAPS content and reflection perception scores for traditional classroom assessment and electronic portfolio classroom assessment?
2. What are teacher candidates' INTASC perception scores?
3. Is there a significant positive relationship between teacher candidates' CAPS content and reflection perception scores and their INTASC perception scores?
4. Is there a significant difference between elementary and secondary teacher candidates' INTASC perception scores?
5. Is there a significant relationship between time spent working on the electronic portfolio and teacher candidates' INTASC perception scores?
6. Is there a significant relationship between level (elementary and secondary) and type of assessment (traditional classroom and electronic portfolio) on teacher candidates’ CAPS content and reflection perception scores?

7. Is there a significant relationship between time spent working on the electronic portfolio and type of assessment (traditional classroom and electronic portfolio) on teacher candidates’ CAPS content and reflection perception scores?

Data Analysis

Data were collected through a web-based survey. Statistical software was used to analyze the data. The first research question was answered using descriptive statistics including the means and standard deviations of the teacher candidates’ CAPS content and reflection perception scores for traditional classroom and electronic portfolio classroom assessment. The second research question was answered using descriptive statistics for the INTASC (1992) perception scores. The third and fifth research questions was analyzed using Pearson $r$ to investigate the relationship between CAPS content and reflection perception scores and the INTASC (1992) perception scores. Both the fourth and fifth questions were
answered with independent t-tests using a .05 level of significance. The sixth and seventh questions were answered using two-way analyses of variance (ANOVAS). The results are reported in Chapter 4.

Institutional Review Board (IRB) for the Protection of Human Subjects Approval

The IRB approved the research proposal on October 3, 2006.
Chapter 4

Results

The purpose of this study was to determine if there are differences in teacher candidates' perceptions of the contributions of traditional classroom assessments and electronic portfolio classroom assessments to the candidates' development of their understanding of education core content areas and the use of reflections. The secondary purpose of this study was to determine teacher candidates' knowledge of Interstate New Teacher Assessment and Support Consortium (INTASC)(1992) principles given hours spent within the traditional and electronic portfolio classroom assessments. Chapter 4 presents the results and findings of this study. The participants of this study included first Bachelor's degree undergraduate teacher certification candidates enrolled in their student teaching experience during the 2006 fall semester. A web-based survey was administered to the participants.

Of the 143 eligible respondents, a total of 73 (51%) teacher candidates completed the survey. Demographic data (gender, ethnicity, age, current certification, Internet access, technology proficiency, hours spent in portfolio) were also collected.
Research Question 1

What are teacher candidates' CAPS content and reflection perception scores for traditional classroom assessment and electronic portfolio classroom assessment?

Research question 1 was answered using descriptive statistics including means and standard deviations (see Table 1 and Table 2). The set of survey questions was answered using a Likert scale that ranged from 1-5 with 1 equaling strongly disagree to 5 equaling strongly agree. The term used for 2 was disagree, 3 was neutral, and 4 was agree. The mean CAPS content perception scores for traditional classroom assessment ranged from a low of 3.71 to a high of 4.19. The mean CAPS reflection perception scores for traditional classroom assessment ranged from a low of 3.51 to a high of 4.16. The mean CAPS content perception scores for electronic portfolio classroom assessment ranged from a low of 2.88 to a high of 3.53. The mean CAPS reflection perception scores for electronic portfolio classroom assessment ranged from a low of 3.45 to a high of 4.00. The overall mean scores of each of the four areas were as follows: CAPS content for traditional classroom assessment \((M = 3.95, SD = 0.55)\), CAPS reflection for traditional classroom assessment \((M = 3.83, SD = 0.61)\), CAPS content for electronic portfolio classroom assessment
Table 1

Means and Standard Deviations for Traditional and Electronic Portfolio Classroom Assessment on CAPS Content Scores

<table>
<thead>
<tr>
<th>Content</th>
<th>Traditional Classroom Assessment</th>
<th>Electronic Portfolio Classroom Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Made the subject matter more meaningful to me.</td>
<td>3.93 0.89</td>
<td>3.14 1.00</td>
</tr>
<tr>
<td>Helped me to relate the content area knowledge of the subject matter.</td>
<td>4.04 0.77</td>
<td>3.22 0.98</td>
</tr>
<tr>
<td>Enhanced my ability to identify when students are ready to learn.</td>
<td>3.90 0.75</td>
<td>3.07 0.92</td>
</tr>
<tr>
<td>Helped me master an instructional strategy that promotes student learning.</td>
<td>4.03 0.67</td>
<td>3.21 1.08</td>
</tr>
<tr>
<td>Helped me realize that all K-12 students learn, but at different rates and by a variety of methods.</td>
<td>4.19 0.68</td>
<td>3.11 1.10</td>
</tr>
<tr>
<td>Allowed me to identify the readiness levels of the students in my classroom.</td>
<td>3.90 0.77</td>
<td>3.03 0.93</td>
</tr>
<tr>
<td>Allowed me to adapt my lessons because of the reflective process.</td>
<td>3.89 0.81</td>
<td>3.47 1.08</td>
</tr>
<tr>
<td>Created learning opportunities that draw upon the K-12 student’s prior knowledge.</td>
<td>3.81 0.78</td>
<td>3.04 1.01</td>
</tr>
</tbody>
</table>
Table 1 (continued)

<table>
<thead>
<tr>
<th>Content</th>
<th>Traditional Classroom Assessment</th>
<th>Electronic Portfolio Classroom Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allowed me to create culturally sensitive lesson plans.</td>
<td>3.90 0.77</td>
<td>3.11 1.09</td>
</tr>
<tr>
<td>Created multicultural learning opportunities.</td>
<td>3.82 0.90</td>
<td>3.08 1.08</td>
</tr>
<tr>
<td>Has been a valuable learning experience in problem solving.</td>
<td>3.93 0.84</td>
<td>3.16 0.97</td>
</tr>
<tr>
<td>Helped me create higher-level activities.</td>
<td>4.15 0.83</td>
<td>3.47 1.09</td>
</tr>
<tr>
<td>Allowed me to differentiate instruction to facilitate critical thinking opportunities at appropriate times.</td>
<td>4.04 0.73</td>
<td>3.41 1.08</td>
</tr>
<tr>
<td>Helped me understand what motivates me and in turn what motivates others.</td>
<td>3.95 0.85</td>
<td>3.29 1.15</td>
</tr>
<tr>
<td>Helped me make use of a variety of media materials in presentations.</td>
<td>3.71 0.82</td>
<td>3.53 1.18</td>
</tr>
<tr>
<td>Helped me make use of a variety of media materials in lesson plans.</td>
<td>3.88 0.76</td>
<td>3.44 1.18</td>
</tr>
<tr>
<td>Helped me in planning differentiated lessons.</td>
<td>4.10 0.69</td>
<td>3.30 1.10</td>
</tr>
<tr>
<td>Helped me demonstrate that I use key concepts and underlying themes in my teaching.</td>
<td>3.97 0.74</td>
<td>3.12 1.00</td>
</tr>
</tbody>
</table>
Table 1 (continued)

<table>
<thead>
<tr>
<th>Content</th>
<th>Traditional Classroom Assessment</th>
<th>Electronic Portfolio Classroom Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Helped me understand how to meet the needs of all students.</td>
<td>M  4.16  SD  0.67</td>
<td>M  3.15  SD  1.06</td>
</tr>
<tr>
<td>Helped me understand the laws and responsibilities for special education students.</td>
<td>M  3.78  SD  0.80</td>
<td>M  2.88  SD  1.05</td>
</tr>
<tr>
<td>Helped me understand the role of the school organization within the larger community.</td>
<td>M  3.88  SD  0.76</td>
<td>M  3.04  SD  1.03</td>
</tr>
<tr>
<td>Totals</td>
<td>M  3.95  SD  0.55</td>
<td>M  3.20  SD  0.89</td>
</tr>
<tr>
<td>Reflection</td>
<td>Traditional Classroom Assessment</td>
<td>Electronic Portfolio Classroom Assessment</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------</td>
<td>-----------------------------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>Prompted me to reflect upon my work.</td>
<td>3.97 0.93</td>
<td>3.75 0.95</td>
</tr>
<tr>
<td>Submitted projects that forced me to think about my subject matter from the K-12 student perspective.</td>
<td>4.00 0.71</td>
<td>3.51 1.03</td>
</tr>
<tr>
<td>Allowed me to demonstrate my knowledge of the subject matter.</td>
<td>4.16 0.69</td>
<td>3.55 1.00</td>
</tr>
<tr>
<td>Expanded my knowledge of technology.</td>
<td>3.51 0.94</td>
<td>4.00 1.07</td>
</tr>
<tr>
<td>Assisted me to plan to infuse technology into my future classroom.</td>
<td>3.71 0.82</td>
<td>3.62 1.01</td>
</tr>
<tr>
<td>Increased my understanding of diverse points of view by viewing other's activity results and comparing them to my own.</td>
<td>3.73 0.93</td>
<td>3.47 1.00</td>
</tr>
<tr>
<td>Improved my media communication techniques.</td>
<td>3.52 0.91</td>
<td>3.73 1.15</td>
</tr>
</tbody>
</table>
Table 2 (continued)

<table>
<thead>
<tr>
<th>Reflection</th>
<th>Traditional Classroom Assessment</th>
<th>M</th>
<th>SD</th>
<th>Electronic Classroom Assessment</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhanced my learning process by the use of journal entries.</td>
<td></td>
<td>3.64</td>
<td>0.98</td>
<td>Has made me aware of using the portfolio as an assessment tool.</td>
<td>3.51</td>
<td>0.94</td>
</tr>
<tr>
<td>Helped me become a better assessor in my teaching experience by being reflective.</td>
<td></td>
<td>3.93</td>
<td>0.69</td>
<td>Has enhanced my abilities to reflect on my practicum/teaching experiences.</td>
<td>3.84</td>
<td>0.83</td>
</tr>
<tr>
<td>Allowed me to explore the power of assessment in evaluating my instruction, my program, and individual student achievement.</td>
<td></td>
<td>3.86</td>
<td>0.71</td>
<td>Prompted me to reflect upon my work.</td>
<td>3.88</td>
<td>0.78</td>
</tr>
<tr>
<td>Has made me aware of using the portfolio as an assessment tool.</td>
<td></td>
<td>3.51</td>
<td>0.94</td>
<td>Helped me be a reflective practitioner.</td>
<td>3.95</td>
<td>0.72</td>
</tr>
<tr>
<td>Has enhanced my abilities to reflect on my practicum/teaching experiences.</td>
<td></td>
<td>3.84</td>
<td>0.83</td>
<td>Enhanced my ability to evaluate my choices and how they impact students.</td>
<td>3.96</td>
<td>0.70</td>
</tr>
<tr>
<td>Helped me formulate my thoughts on ethics as a teacher candidate.</td>
<td></td>
<td>4.04</td>
<td>0.70</td>
<td>Totals</td>
<td>3.83</td>
<td>0.61</td>
</tr>
</tbody>
</table>

Totals 3.83 0.61 3.62 0.88

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$(M = 3.20, SD = 0.89)$, and CAPS reflection for electronic portfolio classroom assessment $(M = 3.62, SD = 0.88)$.

Research Question 2

What are teacher candidates' INTASC perception scores?

Research question number 2 was answered using descriptive statistics including means and standard deviations (see Table 3). Teacher candidates were asked to rate themselves in understanding the knowledge represented by each INTASC principle. The set of survey questions was answered using a Likert scale that ranged from 1-5 with 1 equaling very low to 5 equaling very high. The term used for 2 was low, 3 was average, and 4 was high. The mean INTASC perception scores ranged from a low of 3.90 to a high of 4.23. The overall mean score was 4.06 $(SD = 0.77)$.

Research Question 3

Is there a significant positive relationship between teacher candidates' CAPS content and reflection perception scores and their INTASC perception scores?

For traditional classroom assessment there was a significant positive relationship between teacher candidates’ INTASC perception scores and their CAPS content perception scores, $r(71) = .301$, $p = .010$ (two-tailed) and their CAPS reflection perception scores, $r(71) = .317$, $p = .006$ (two-tailed).
Table 3

*Means and Standard Deviations of INTASC Perception Scores*

| INTASC Principle #1: The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and can create learning experiences that make these aspects of subject matter meaningful for students. | 3.93  0.79 |
| INTASC Principle #2: The teacher understands how children learn and develop, and can provide learning opportunities that support their intellectual, social and personal development. | 4.03  0.67 |
| INTASC Principle #3: The teacher understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners. | 4.07  0.82 |
| INTASC Principle #4: The teacher understands and uses a variety of instructional strategies to encourage students' development of critical thinking, problem solving, and performance skills. | 4.03  0.74 |
| INTASC Principle #5: The teacher uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation. | 4.10  0.78 |

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| INTASC Principle #6: The teacher uses knowledge of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom. | 3.90 0.75 |
| INTASC Principle #7: The teacher plans instruction based upon knowledge of subject matter, students, the community, and curriculum goals. | 4.19 0.68 |
| INTASC Principle #8: The teacher understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social and physical development of the learner. | 3.99 0.81 |
| INTASC Principle #9: The teacher is a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other professionals in the learning community) and who actively seeks out opportunities to grow professionally. | 4.23 0.81 |
| INTASC Principle #10: The teacher fosters relationships with school colleagues, parents, and agencies in the larger community to support students' learning and well being. | 4.16 0.76 |
| Totals | 4.06 0.77 |
For electronic portfolio classroom assessment there was not a significant relationship between teacher candidates' INTASC perception scores and their CAPS content perception scores, $r(71) = .193, p = .102$ (two-tailed) or their CAPS reflection perception scores, $r(71) = .083, p = .485$ (two-tailed).

Research Question 4

Is there a significant difference between elementary and secondary teacher candidates' INTASC perception scores?

There was not a significant difference between elementary ($M = 3.98, SD = 0.62$) and secondary ($M = 4.21, SD = 0.46$) teacher candidates' INTASC perception scores, $t(66) = -1.698, p = .094$ (two-tailed), $d = 0.43$.

Research Question 5

Is there a significant relationship between time spent working on the electronic portfolio and teacher candidates' INTASC perception scores?

Based on frequencies of both the pilot surveys and dissertation study surveys, it was determined to divide teacher candidates into two groups based on the time spent working on the electronic portfolio (1) less than 5 hours and (2) 5 or more hours. There was not a significant difference between those teacher candidates who spent less than 5 hours ($n = 61, M = 4.03, SD = 0.56$) and those who
spent 5 or more hours \((n = 12, M = 4.23, SD = 0.62)\) working on the electronic portfolio in their understanding of the INTASC principles, \(t(71) = -1.071, p = .288\) (two-tailed), \(d = 0.34\).

Using the Pearson \(r\) test, there was not a significant relationship between time spent working on the electronic portfolio and teacher candidates' understanding of the INTASC principles, \(r(71) = .193, p = .102\) (two-tailed).

**Research Question 6**

Is there a significant relationship between level (elementary and secondary) and type of assessment (traditional classroom and electronic portfolio) on teacher candidates’ CAPS content and reflection perception scores?

The data were analyzed using two-way analyses of variance (ANOVAS). For CAPS content there was a statistically significant main effect for type of assessment, \(F(1,66) = 44.500, p < .0005, d = 1.03\) (traditional \(M = 3.98, SD = 0.55\); electronic portfolio \(M = 3.23, SD = 0.90\)). There was no statistically significant interaction between type of assessment and level, \(F(1,66) = 1.311, p = .256\); or main effect for level, \(F(1,66) = 0.176, p = .676\).

For CAPS reflection there was a statistically significant main effect for type of assessment,
$F(1,66) = 8.716, \ p = .004$; and interaction between type of assessment and level, $F(1,66) = 15.847, \ p < .0005$. The main effect for level was not statistically significant, $F(1,66) = 0.455, \ p = .503$. Table 4 summarizes the means and standard deviations of the CAPS content and reflection perception scores by level.

To follow up the significant interaction for CAPS reflection, the simple main effects test for type of assessment between levels indicated that there was no statistically significant difference between the elementary ($M = 3.74, \ SD = 0.55$) and secondary ($M = 4.03, \ SD = 0.66$) levels for traditional classroom assessment, $F(1,66) = 3.752, \ p = .057, \ d = 0.48$. However, there was a statistically significant difference between the elementary ($M = 3.84, \ SD = 0.73$) and secondary ($M = 3.35, \ SD = 0.99$) levels for electronic portfolio classroom assessment $F(1,66) = 5.572, \ p = .021, \ d = 0.57$.

For CAPS reflection, the simple main effects test for level between type of assessments indicated that there was no statistically significant difference between the traditional ($M = 3.74, \ SD = 0.55$) and electronic portfolio ($M = 3.84, \ SD = 0.73$) classroom assessments for the elementary level, $F(1,66) = 0.666, \ p = .417, \ d = 0.16$. However, there was a statistically significant difference
Table 4

Means and Standard Deviations of the CAPS Content and Reflection Perception Scores by Type of Assessment

<table>
<thead>
<tr>
<th></th>
<th>Content</th>
<th>Reflection</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Traditional Classroom</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elementary (n = 41)</td>
<td>3.90</td>
<td>3.74</td>
</tr>
<tr>
<td>Secondary (n = 27)</td>
<td>4.10</td>
<td>4.03</td>
</tr>
<tr>
<td>Total</td>
<td>3.98</td>
<td>3.85</td>
</tr>
</tbody>
</table>

| **Electronic Portfolio** |         |            |
| Elementary (n = 41)      | 3.26    | 3.84       |
| Secondary (n = 27)       | 3.19    | 3.35       |
| Total                    | 3.23    | 3.65       |
between the traditional \((M = 4.03, SD = 0.66)\) and electronic portfolio \((M = 3.35, SD = 0.99)\) classroom assessments for the secondary level, \(F(1,66) = 19.931, p < .0005, d = 0.82.\)

**Research Question 7**

Is there a significant relationship between time spent working on the electronic portfolio and type of assessment (traditional classroom and electronic portfolio) on teacher candidates' CAPS content and reflection perception scores?

The data were analyzed using two-way analyses of variance (ANOVAS). For CAPS content there was a statistically significant interaction between type of assessment and time spent working on the electronic portfolio, \(F(1,71) = 4.432, p = .039;\) main effect for type of assessment, \(F(1,71) = 26.280, p < .0005;\) and main effect for time spent working on the electronic portfolio, \(F(1,71) = 6.276, p = .015.\)

For CAPS reflection, there was no statistically significant main effect for type of assessment, \(F(1,71) = 1.132, p = .291;\) interaction between type of assessment and time spent working on the electronic portfolio, \(F(1,71) = 2.288, p = .135;\) or main effect for time spent working on the electronic portfolio,
Table 5 summarizes the means and standard deviations of the CAPS content and reflection perception scores by time spent working on the electronic portfolio.

To follow up the significant interaction for CAPS content, the simple main effects test for type of assessment between groups for time spent working on the electronic portfolio indicated that there was not a statistically significant difference between the teacher candidates who spent less than 5 hours working on the electronic portfolio \( (M = 3.92, SD = 0.54) \) and those who spent 5 or more hours \( (M = 4.04, SD = 0.60) \) working on the electronic portfolio for traditional classroom assessment, \( F(1,71) = 0.594, p = .443, d = 0.21 \). There was a statistically significant difference between the teacher candidates who spent less than 5 hours working on the electronic portfolio \( (M = 3.04, SD = 0.93) \) and those who spent 5 or more hours \( (M = 3.67, SD = 0.55) \) working on the electronic portfolio for electronic portfolio classroom assessment, \( F(1,71) = 7.602, p = .007, d = 0.85 \).

For CAPS content, the simple main effects test for the groups of time spent working on the electronic portfolio between type of assessments indicated that for those teacher candidates who spent less than 5 hours working on
Table 5

Means and Standard Deviations of the CAPS Content and Reflection Perception Scores by Time Spent Working on the Electronic Portfolio

<table>
<thead>
<tr>
<th></th>
<th>Content</th>
<th></th>
<th>Reflection</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
</tr>
<tr>
<td><strong>Traditional Classroom</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 5 hours (n = 54)</td>
<td></td>
<td>3.92</td>
<td>0.54</td>
<td>3.79</td>
</tr>
<tr>
<td>5 or more hours (n = 19)</td>
<td></td>
<td>4.04</td>
<td>0.60</td>
<td>3.91</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>3.95</td>
<td>0.55</td>
<td>3.82</td>
</tr>
<tr>
<td><strong>Electronic Portfolio</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 5 hours (n = 54)</td>
<td></td>
<td>3.04</td>
<td>0.93</td>
<td>3.49</td>
</tr>
<tr>
<td>5 or more hours (n = 19)</td>
<td></td>
<td>3.67</td>
<td>0.55</td>
<td>3.97</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>3.20</td>
<td>0.89</td>
<td>3.62</td>
</tr>
</tbody>
</table>
the electronic portfolio there was a statistically significant difference between traditional classroom assessment \((M = 3.92, SD = 0.54)\) and electronic portfolio classroom assessment \((M = 3.04, SD = 0.93)\),
\[F(1,71) = 50.321, \ p < .0005, \ d = 1.20.\] There was not a statistically significant difference for those teacher candidates who spent 5 or more hours working on the electronic portfolio between traditional classroom assessment \((M = 4.04, SD = 0.60)\) and electronic portfolio classroom assessment \((M = 3.67, SD = 0.55)\),
\[F(1,71) = 3.085, \ p = .083, \ d = 0.64.\]
Chapter 5

Discussion

The purpose of this study was to determine if there were differences in teacher candidates' perceptions of the contributions of traditional classroom assessments and electronic portfolio classroom assessments to the candidates' development of their understanding of education core content areas and the use of reflections. The secondary purpose of this study was to determine teacher candidates' knowledge of Interstate New Teacher Assessment and Support Consortium (INTASC) (1992) principles given hours spent within the traditional and electronic portfolio classroom assessments. The participants included both elementary and secondary teacher candidates who would be certified in many different subject and field endorsement areas. Of the possible 143 teacher candidates enrolled in the 2006 fall semester, 73 completed all of the required data and were included in the study.

Research Questions

To guide the inquiry, the following research questions were posed:

1. What are teacher candidates' CAPS content and reflection perception scores for traditional classroom
assessment and electronic portfolio classroom assessment?

2. What are teacher candidates’ INTASC perception scores?

3. Is there a significant positive relationship between teacher candidates’ CAPS content and reflection perception scores and their INTASC perception scores?

4. Is there a significant difference between elementary and secondary teacher candidates’ INTASC perception scores?

5. Is there a significant relationship between time spent working on the electronic portfolio and teacher candidates’ INTASC perception scores?

6. Is there a significant relationship between level (elementary and secondary) and type of assessment (traditional classroom and electronic portfolio) on teacher candidates’ CAPS content and reflection perception scores?

7. Is there a significant relationship between time spent working on the electronic portfolio and type of assessment (traditional classroom and electronic portfolio) on teacher candidates’ CAPS content and reflection perception scores?
INTASC Findings

Traditional classroom assessment has been the norm for college faculty and teacher candidates for many years. Electronic portfolio classroom assessment usage has been a recent change in assessment. More importance has been placed on INTASC (1992) principles in the traditional classroom assessment as well as the electronic portfolio classroom assessment. The results of this study show that INTASC perception overall scores were above average ($M = 4.06, SD = 0.77$). This result indicated that teacher candidates are confident in their knowledge and understanding of the INTASC (1992) principles. The principles are intended to provide a conceptual framework for what represents good teaching.

The move to use of INTASC (1992) principles and electronic portfolios has been purposeful and deliberate at this college. During the fall of 2002, a subgroup of Teacher Education faculty and college staff began meeting and making decisions on how the educational core classes would utilize the electronic portfolio. The committee became an adhoc committee called the “E-CORE committee”. Faculty members that represented each core class took ideas back and forth to the rest of the faculty that taught the same course. Planning the electronic portfolio’s structure
and standards was a vital part of the assessment process. Many standards were considered, but after much discussion, the INTASC (1992) principles were chosen as the framework for the electronic portfolio.

Faculty members continued to emphasize the knowledge represented by each INTASC (1992) principle through their teaching in the traditional classroom and electronic portfolio. Through continued discussion, the E-CORE committee developed a matrix of matching electronic portfolio artifacts with individual INTASC (1992) principles. While there were overlaps and gaps, faculty committee members discussed where they required potential artifacts that met the INTASC (1992) principles. Today, teacher candidates' exposure to the INTASC (1992) principles happens in both traditional classroom and electronic portfolio assessments.

Another area of the electronic portfolio is the summative portfolio, named "PrEP" (Professional Educator's Portfolio). The summative portfolio consists of a series of three groups of artifacts. The first is developed from classroom activities in the teacher candidate's core education courses. The second series is developed from activities in the teacher candidate's methods courses, while the teacher candidate develops the third series of
artifacts. These artifacts are completed and scored using a standardized rubric. Once the formative artifacts are deemed satisfactory by the faculty they become a part of the summative portfolio. Again, the change to this type of assessment has evolved over several semesters. Faculty and staff have given much time and energy in the planning stages of the electronic portfolio. Dr. Saundra Wetig (personal communication, March 19, 2007) reported, "The committee spent many meetings discussing what would be best for the teacher candidates. The planning process was a vital step to validate the electronic portfolio process within the curriculum."

On a scale that ranged from 1-5 with 1 equaling very low to 5 equaling very high, the two highest means that were represented in the survey were INTASC principle #7 ($M = 4.19, SD = 0.68$) and INTASC principle #9 ($M = 4.23, SD = 0.81$) (see Table 3). These two principles match the area of instructional planning skills and self-reflection. According to Wetzel and Strudler (2005), John Hopkins University is looking at the possibility of matching one artifact to multiple INTASC (1992) principles. This idea would bring more synthesis and reflection to the artifact. Faculty members on this campus are doing the same thing, matching artifacts to INTASC (1992) principles.
The results of the study did not show any statistically significant differences between elementary and secondary levels or between hours spent working in the electronic portfolio based on their understanding of the INTASC (1992) principles. The lack of significance is not surprising because the INTASC (1992) principles are the framework that all levels use in the curriculum in both the traditional classroom and electronic portfolio assessment. No matter how many hours are being spent in the electronic portfolio, teacher candidates are still required to create artifacts that match the principles.

Finally, there was a small positive relationship between CAPS content and reflection and INTASC perception scores for traditional classroom assessment. The relationship was not significant for electronic portfolio classroom assessment. One possible explanation would be the lack of exposure to the electronic portfolio. While the artifacts have become a requirement over time, it has been a continued transition phase over the last eight semesters. One teacher candidate wrote, "The portfolio would be more useful if we actually did more work in it throughout our college career." While another one wrote,

For the future, I would like to see ALL classes use the electric portfolio in some way, so that
when it comes time for each teacher candidate to utilize it, she/he will be able to use it with ease and understand how to adapt if there are things she/he needs to change.

Looking just at how electronic portfolios can enhance the curriculum and the educational experience, it is really up to the faculty to ensure that teacher candidates can get the most out of the learning experience. "If we are to encourage students to be risk-takers, teachers must be risk-takers, too" (Hargreaves, 2003, p. 28). Electronic portfolios are now part of the paradigm shift from traditional assessment to electronic portfolio assessment (Love et al., 2004).

**Overall CAPS Findings**

CAPS survey intent was to measure teacher candidates' perception of their understanding of core content areas and the use of reflections within the traditional classroom assessment and electronic portfolio classroom assessment. The overall mean score of each of the four areas indicate the perceptions remain more positive in traditional classroom assessment. The overall mean scores of each of the four areas were as follows: CAPS content for traditional classroom assessment \( (M = 3.95, \ SD = 0.55) \), CAPS content for electronic portfolio classroom assessment
(M = 3.20, SD = 0.89), CAPS reflection for traditional classroom assessment (M = 3.83, SD = 0.61), and CAPS reflection for electronic portfolio classroom assessment (M = 3.62, SD = 0.88). The standard deviations are larger for the electronic portfolio than the traditional classroom assessment because of greater variability in faculty and teacher candidate use in the electronic portfolio. The findings are not surprising given that classroom tradition is difficult to change. Consistent with literature, the need for time to implement was emphasized (Wetzel & Strudler, 2005; Zidon, 1996). The implementation of an electronic portfolio can take many semesters to be fully utilized in the assessment process. A teacher candidate commented, “Taking the time to get everything on the portfolio and having the teachers take the time to explain it takes time away from our learning about other things. If there was an introductory class or seminar to teach about portfolio... I think that might be helpful.”

In the area of CAPS content, one of the highest mean scores of electronic portfolio classroom assessment was, “[Electronic Portfolio Classroom Assessment] Helped me make use of a variety of media materials in my lesson plans.” In addition to responses on the Likert items of the survey, similar ideas were reflected in the open-ended questions.
For example, a teacher candidate stated, "It [electronic portfolio] provided me an opportunity to create technology I can share with others to show my teaching styles."

One of the highest mean CAPS reflection perception scores for electronic portfolio classroom assessment was, "Improved my media communication techniques." A teacher candidate followed up with the comment:

The electronic portfolio has forced me to be more reflective of my teaching. Through my classes at [Metropolitan University] we did most of our reflections on our portfolio, if we didn't do that I wouldn't have been as reflective of my teaching.

Another teacher candidate comments included, "I feel it was helpful in making me more genuinely reflective as I was able to actually see myself in practice." And another teacher candidate wrote, "It was used more for a reflective tool to guide me as I learned different ways to instruct students. It was a great tool to keep my thoughts organized and concentrated."

The process of reflection should be interactive between the teacher candidate and instructor. Connecting the artifacts with the learner's reflection should be the
justification for using the artifact as evidence of learning. Much of the reflective practice first happens in the classroom as instructors teach the reflective process. According to Ahn (2005),

The level of reflection and assessment is richer with e-portfolios because student work is displayed with their reflections, data about the learning standard, and teacher feedback. This connection of elements allows all stakeholders to continually reflect on the learning process, which is the prime advantage of e-portfolios as an assessment tool. (p. 14)

According to a study by Wetzel and Strudler (2005), many universities are, "re-considering the number of artifacts, the type of artifacts, and the depth of reflection needed for students to demonstrate mastery of a standard" (p. 235). When teacher candidates start collecting artifacts for their electronic portfolio, they need some direction and scaffolding, so the institution needs to provide some direction over the content. This could greatly enhance a teacher candidate's use of the electronic portfolio as an assessment tool for learning.
Findings in Level with Assessment

The results of the study showed CAPS content perception scores were significantly higher in traditional classroom assessment than electronic portfolio classroom assessment regardless of level. Content is first referenced in the traditional classroom across all levels. Many teacher candidates may not carry over the concept of content to the electronic portfolio. One teacher candidate wrote, "The only role the Electronic Portfolio has played is documentation of a few assignments for a small portion of classes." Exposure to many different types of assessments could help change the perception of the teacher candidate.

A statistically significant interaction was found between level and assessment for CAPS reflection. To follow up the significant interaction, the simple main effects test for type of assessment between levels indicated that there was a statistically significant difference between the elementary and secondary levels for electronic portfolio classroom assessment with elementary level teacher candidates being more positive. An opportunity to use the electronic portfolio was more available at the elementary level. Being a member of the educational core committee, the researcher realized that the elementary
The program was much more consistent in the use of electronic portfolio than the secondary program. Faculty members within the elementary program have continued to be proactive in creating artifacts that represent the curriculum and in turn match INTASC (1992) principles. The open-ended response from an elementary teacher candidate supports this finding:

I believed that the projects that were presented on portfolio were the greatest learning experience for me. I really enjoyed being able to make an I-movie and present it in my portfolio with my lesson and sample work. This process took a significant amount of time, but it helped me reflect upon my own teaching style. I enjoyed learning about how to make movies. This could be a great motivation for some of my future students. I am glad that I got to learn how to make an I-movie. I believe this project will be useful in future job interviews. I hope to create movies with my future students.

Secondary teacher candidates also had some open-ended statements that supported the findings:

The electronic portfolio needs to be pushed more by profs. Although we are in college and should
be internally motivated to use the electronic portfolio, I was busy studying material from the textbook and handouts provided in class.

Traditional assessment continues to have its place in higher education. This study also confirmed that some teacher candidates focus their efforts on what is going on day to day in the classroom. Another teacher candidate stated, "If teachers made it more of a priority, it would have made a better impact on me."

Findings in Time Spent Working in the Electronic Portfolio with Assessment

The results of the study showed when comparing hours spent working on the electronic portfolio, those teacher candidates who spent more time had significantly higher CAPS content perception scores than those who did not spend much time. The study also showed that when teacher candidates put less than 5 hours of time into working in the electronic portfolio, they had a statistically significant higher perception score in traditional classroom assessment for CAPS content scores. There were no significant findings in the CAPS reflection perception scores in time spent working on the electronic portfolio.

It only makes sense that if teacher candidates spend more time working in the electronic portfolio, they will
have a greater perception score for the assessment tool in the area of content. Even though the study did not show the same significance in the area of reflection, exposure to the electronic portfolio is still variable from course to course and faculty member to faculty member. On the other hand, those who spent less time may have had a different experience. This may be caused by lack of activities planned for the electronic portfolio or the faculty may not be prepared to use it appropriately. One teacher candidate wrote, "Be more consistent and use it when they say they are going to use it."

Tucker, Stronge, Gareis, and Beers (2003) found the time required for completion was a major issue that developed. They went on to say that others saw it as a waste of time that took away from the regular classroom. Also, Lyons's (1998) longitudinal study of 10 teacher candidates on the developmental nature of reflection through portfolios is a good example of the time it takes to develop and work in a portfolio. She found that reflection in teaching is a process that evolves over time in which teacher candidates make connections between their values, purposes, and actions.
Recommendations for Practice

With the continued effort by the college to institute a comprehensive assessment system, electronic portfolio assessment should be introduced in the very first course in which teacher candidates are enrolled. In this course, time must be spent in explaining what an electronic portfolio is as well as how it can be used to enhance the educational experience. Teacher candidates need to understand and utilize different types of assessment to be successful in their future teaching career. The beginning course needs to discuss all of the different parts of the electronic portfolio, indicating how they can benefit and direct teacher candidates throughout their coursework.

Another recommendation is to use the electronic portfolio in all education classes. One teacher candidate who reported higher use of the electronic portfolio suggested, "I think we should use it with all of our classes. I only used it in a few but think we could have done many great things with it along the way." Many respondents confirmed this idea suggesting consistent use so that the electronic portfolio would have a positive impact on their learning environment across the curriculum.

The third recommendation is the development of a marketing portfolio. The marketing portfolio could be a
subset of the summative portfolio and allow teacher candidates to select products for inclusion when they begin looking for teaching jobs. Human resource personnel and administrators who are involved in the hiring process would be able to view the quantity and quality of teacher candidates' growth as future educators. Teacher candidates need to understand the impact of the electronic portfolio. One teacher candidate commented, "I also think that it should be something we should be shown how to use when we graduate. Now that the information is in there, now what?" This statement triggers the thoughts of their future. Do they understand the big picture?

**Recommendations for Future Research**

It is important to continue to assess the teacher candidates' perceptions of the electronic portfolio. Future research should continue to study teacher candidates and follow them through their educational experience. What type of individual experiences take place with the electronic portfolio, and how do teacher candidates perceive their learning experience?

This research study was a snapshot in time. As the electronic portfolio continues to develop, it will be important to continue to collect teacher perception data every semester. It is also important to investigate faculty
perceptions. An instrument needs to be developed to survey faculty along with the teacher candidates for program improvement.

Another future research area would include more Colleges of Education around the country. How do the teacher candidates in this study compare with other university candidates who are implementing electronic portfolio classroom assessment models? What program changes have been implemented due to the outcomes of these studies? How have teacher candidates and faculty responded to the changes?

Conclusion

This study provided insight into teacher candidates' perceptions of traditional classroom assessment and electronic portfolio classroom assessment. It has also helped us to better understand teacher candidates' assessment of their knowledge of the INTASC (1992) principles.

Portfolios show great promise as pedagogy of transformative teaching within institutions of teacher education. The portfolio process helps teachers to construct a professional knowledge base meaningful within the context of their own diverse cultures and diverse experiences, a
knowledge base that they can identify and adapt to meet the exigencies of today's classrooms.

(Freidus, 1998, p. 65)

Electronic portfolio assessment is becoming an important means to demonstrate competency in an authentic way in higher education. Across the country, a number of universities are turning to electronic portfolio classroom assessment to help evaluate teacher candidates' progress in becoming a teacher. It is important to make sure Colleges of Education are doing the best they can do to help teacher candidates prepare for their future.
References


professional development: Do they make a difference?


University of Nebraska at Omaha, College of Education. (2001). National Council for Accreditation of Teacher Education: *Continuing accreditation report*. Omaha, NE: Author.


APPENDIX A

Interstate New Teacher Assessment and Support Consortium

(INTASC) (1992) Principles
The 10 INTASC principles are listed below. Specific indicators for knowledge, dispositions, and performances accompany each principle but are not listed in this table.

**Principle #1:** The teacher understands the central concepts, tools of inquiry, and the structures of the discipline(s) he or she teaches and can create learning experiences that make these aspects of subject matter meaningful for students.

**Principle #2:** The teacher understands how children learn and develop, and can provide learning opportunities that support their intellectual, social and personal development.

**Principle #3:** The teacher understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners.

**Principle #4:** The teacher understands and uses a variety of instructional strategies to encourage students' development of critical thinking, problem solving and performance skills.
Principle #5: The teacher uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning and self-motivation.

Principle #6: The teacher uses knowledge of effective verbal, nonverbal and media communication techniques to foster active inquiry, collaboration and supportive interaction in the classroom.

Principle #7: The teacher plans instruction based upon knowledge of subject matter, the community and curriculum goals.

Principle #8: The teacher understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social and physical development of the learner.

Principle #9: The teacher is a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents and other
professionals in the learning community) and who actively seeks out opportunities to grow professionally.

*Principle #10:* The teacher fosters relationships with school colleagues, parents and agencies in the larger community to support students' learning and well-being.
APPENDIX B

Cover Letter

and

Classroom Assessment Perception Survey (CAPS)
October 3, 2006

Dear Teacher Candidate:

Congratulations on completing the requirements to student teach! I and the College of Education would benefit from your experience and a small amount of your time. I am a doctoral student at the University of Nebraska at Omaha and am collecting data to complete the research component of my program. My research is the understanding of the Interstate New Teacher Assessment and Support Consortium (INTASC) Principles through your class work and the College of Education Online Electronic Portfolio. Specifically, I am examining how teacher candidates perceive themselves in each of the areas and how they relate to the INTASC Principles.

The Classroom Assessment Perception Survey (CAPS) is attached. I am asking that you fill in all of the sections completely. Your responses will be held in complete confidence; only aggregate data will be reported. I am the only investigator for this study, and only I will have access to the survey data.

Instructions: For each INTASC principle, choose the most appropriate rating for your knowledge based on your experience at the time you complete this survey. Then for each statement following the principle, circle one number for each area represented by: Traditional Classroom Assessment and Electronic Portfolio Classroom Assessment. Please respond to all demographics and questions. This survey should take around 15 minutes to complete.

Definitions:
Traditional Classroom Assessment – written and oral examinations, essays, class discussions, journals, performance assessments, projects, and exhibitions
Electronic Portfolio Classroom Assessment – activities and assessments that utilize the College of Education Electronic Portfolio

Thank you so much for your contribution to this research!
Sincerely,
Bob Goeman
Doctoral Student
Kayser Hall 332
Omaha, NE 68182
402-554-3483
bgoeman@mail.unomaha.edu
Demographics:
1. Gender: □ Male □ Female
2. Ethnicity: □ African American □ Asian □ Caucasian □ Hispanic □ Native American □ Other
4. Certification level you are preparing: (please select only one)
   □ Elementary □ Middle □ Secondary □ K-12
5. I am a first semester/first year student teacher? □ Yes □ No
6. I have access to the Internet outside of the campus? □ Yes □ No
7. On a scale of 1-5 with 1 being not at all proficient and 5 being very proficient, how do you evaluate your technology skills? □ 1 □ 2 □ 3 □ 4 □ 5
8. How many courses have you been involved with at UNO that used the digital portfolio? ______
9. On average, how many hours did you spend in each course working on the digital portfolio? ______

Select only one response for each item and circle the most appropriate response using the following scale:

1 – Very Low
2 – Low
3 – Average
4 – High
5 – Very High

Overall, how do you rate yourself in understanding the knowledge represented by each principle:

INTASC Principle #1: The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and can create learning experiences that make these aspects of subject matter meaningful for students.

INTASC Principle #2: The teacher understands how children learn and develop, and can provide learning opportunities that support their intellectual, social and personal development.
INTASC Principle #3: The teacher understands how students differ in their approaches to learning and creates instructional opportunities that are adapted to diverse learners.

INTASC Principle #4: The teacher understands and uses a variety of instructional strategies to encourage students' development of critical thinking, problem solving, and performance skills.

INTASC Principle #5: The teacher uses an understanding of individual and group motivation and behavior to create a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation.

INTASC Principle #6: The teacher uses knowledge of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.

INTASC Principle #7: The teacher plans instruction based upon knowledge of subject matter, students, the community, and curriculum goals.

INTASC Principle #8: The teacher understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social and physical development of the learner.

INTASC Principle #9: The teacher is a reflective practitioner who continually evaluates the effects of his/her choices and actions on others (students, parents, and other professionals in the learning community) and who actively seeks out opportunities to grow professionally.

INTASC Principle #10: The teacher fosters relationships with school colleagues, parents, and agencies in the larger community to support students' learning and well being.
Select only one response for each category and circle the most appropriate response using the following scale:

1 – Strongly Disagree
2 – Disagree
3 – Undecided
4 – Agree
5 – Strongly Agree

<table>
<thead>
<tr>
<th>How I perceive Traditional Classroom Assessment and Electronic Portfolio Classroom Assessment have supported my understanding of content. (please mark both columns)</th>
<th>Traditional Classroom Assessment</th>
<th>Electronic Portfolio Classroom Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Made the subject matter more meaningful to me.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>2. Helped me to relate the content area knowledge of the subject matter.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>3. Enhanced my ability to identify when students are ready to learn.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>4. Helped me master an instructional strategy that promotes student learning.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>5. Helped me realize that all K-12 students learn, but at different rates and by a variety of methods.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>6. Allowed me to identify the readiness levels of the students in my classroom.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>7. Allowed me to adapt my lessons because of the reflective process.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>8. Created learning opportunities that draw upon the K-12 student’s prior knowledge.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>9. Allowed me to create culturally sensitive lesson plans.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>10. Created multicultural learning opportunities.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>11. Has been a valuable learning experience in problem solving.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>12. Helped me create higher-level activities.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>13. Allowed me to differentiate instruction to facilitate critical thinking opportunities at appropriate times.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>
14. Helped me understand what motivates me and in turn what motivates others.  
15. Helped me make use of a variety of media materials in presentations.  
16. Helped me make use of a variety of media materials in lesson plans.  
17. Helped me in planning differentiated lessons.  
18. Helped me demonstrate that I use key concepts and underlying themes in my teaching.  
19. Helped me understand how to meet the needs of all students.  
20. Helped me understand the laws and responsibilities for special education students.  
21. Helped me understand the role of the school organization within the larger community.

Select only one response for each category and circle the most appropriate response using the following scale:  
1 - Strongly Disagree  
2 - Disagree  
3 - Undecided  
4 - Agree  
5 - Strongly Agree

<table>
<thead>
<tr>
<th>How I perceive Traditional Classroom Assessment and Electronic Portfolio Classroom Assessment have supported my use of reflection. (please mark both columns)</th>
<th>Traditional Classroom Assessment</th>
<th>Electronic Portfolio Classroom Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prompted me to reflect upon my work.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Submitted projects that forced me to think about my subject matter from the K-12 student perspective.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Allowed me to demonstrate my knowledge of the subject matter.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Expanded my knowledge of technology.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>Assisted me to plan to infuse technology into my future classroom.</td>
<td>1 2 3 4 5</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>
6. Increased my understanding of diverse points of view by viewing other's activity results and comparing them to my own. | 1 2 3 4 5 | 1 2 3 4 5  
7. Improved my media communication techniques. | 1 2 3 4 5 | 1 2 3 4 5  
8. Enhanced my learning process by the use of journal entries. | 1 2 3 4 5 | 1 2 3 4 5  
9. Helped me become a better assessor in my teaching experience by being reflective. | 1 2 3 4 5 | 1 2 3 4 5  
10. Allowed me to explore the power of assessment in evaluating my instruction, my program, and individual student achievement. | 1 2 3 4 5 | 1 2 3 4 5  
11. Has made me aware of using the portfolio as an assessment tool. | 1 2 3 4 5 | 1 2 3 4 5  
12. Has enhanced my abilities to reflect on my practicum/teaching experiences. | 1 2 3 4 5 | 1 2 3 4 5  
13. Prompted me to reflect upon my work. | 1 2 3 4 5 | 1 2 3 4 5  
14. Helped me be a reflective practitioner. | 1 2 3 4 5 | 1 2 3 4 5  
15. Enhanced my ability to evaluate my choices and how they impact students. | 1 2 3 4 5 | 1 2 3 4 5  
16. Helped me formulate my thoughts on ethics as a teacher candidate. | 1 2 3 4 5 | 1 2 3 4 5  

What role has the electronic portfolio played in your preparation as a teacher?


Please share any additional comments regarding the COE electronic portfolio that could help make it better.


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APPENDIX C

Institutional Review Board Approval
October 2, 2006

Robert Goeman  
Educational Admin & Supervision - KH 332  
UNO - VIA COURIER

IRB#: 340-06-EX

TITLE OF PROTOCOL: Teacher Candidates' Perceptions of Traditional Classroom Assessments and Electronic Portfolio Classroom Assessments

Dear Mr. Goeman:

The IRB has reviewed your Exemption Form for Exempt Educational, Behavioral, and Social Science Research on 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 D. Prentice, Ph.D.
Co-Chair, IRB

EDP/gdk