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Innovation in teacher education: faculty members' and assessment coordinators' perceptions of electronic assessment systems

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INNOVATION IN TEACHER EDUCATION: FACULTY MEMBERS’ AND ASSESSMENT COORDINATORS’ PERCEPTIONS OF ELECTRONIC ASSESSMENT SYSTEMS

A Dissertation

Submitted to the Graduate Faculty of the
Louisiana State University and
Agricultural and Mechanical College
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

in

The Department of Educational Theory, Policy, and Practice

by

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December 2007
DEDICATION

To Dr. Susan LeJeune:

For inspiring me to make a difference

and for showing me how.

One day, I hope to influence one of my students

the way that you have influenced me.

Your zeal for life and for teaching motivate me each day.
ACKNOWLEDGEMENTS

The completion of a dissertation and the resulting attainment of a doctoral degree, collectively, is an accomplishment for which one individual is recognized. While I am proud to be recognized for this achievement, it would not have been possible without the support and encouragement of many individuals. This is the expression of my gratitude for what they have done for me.

My Dissertation Committee

The leadership provided to me throughout the dissertation writing process made this achievement possible. Dr. Janice Hinson, my committee chairperson, was a positive force from the time I drafted the proposal to the time I defended the study. To her, I express my deepest gratitude for demonstrating to me that overcoming what seems impossible and improbable is possible with determination and persistence. I share this achievement with Dr. Hinson and my other committee members, Dr. Eugene Kennedy, Dr. Yiping Lou, Dr. Robbie McHardy, and Dr. Evangelos Triantaphyllou. Their expertise added much value to this study, and I appreciate their dedication to my success.

My Family

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My Friends and Colleagues

Louisiana State University at Eunice (LSUE) Faculty and Staff

My doctoral adventure began while I was employed at LSUE. Had my colleagues from nearly every division there, especially Cindy, Ed, Ellen, Grace, Jeanne, and Renee, not encouraged me on a daily basis to overcome the program’s early barriers, I cannot say with certainty that I would be composing this document today.

McNeese State University (MSU) Faculty and Staff

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Louisiana State University Faculty and Staff

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Faye, Debbie, and Karen

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ABSTRACT

Electronic assessment systems (EASs) have proliferated teacher education programs in postsecondary education. Mostly, these systems facilitate candidate and program assessment through technology-mediated procedures, allowing for greater efficiency and accuracy in data collection and analysis. If implemented successfully, the work of individuals associated with teacher education programs from faculty members to assessment coordinators and beyond has the potential to benefit from utilizing the system for course-based and programmatic assessment, both of which are criteria for the accreditation of teacher education programs by the National Council for Accreditation of Teacher Education (NCATE).

This qualitative study explores the perceptions of faculty and assessment coordinators at three institutions of higher education as they relate to three different EASs. Such research is absent from current literature. However, limited research on EASs does exist, and this study contributes to that research within the context of teacher education programs and the innovation diffusion theoretical framework. To accomplish that, the research questions are addressed through the use of informal conversational and interview guide protocols, both suggested by Patton (2002), with the participants.

Data analysis reflects the constant comparative method of qualitative data analysis (Glaser & Strauss, 1967), and the results of that analysis are presented in question-and-answer case study and cross-case analysis formats. These reporting methods present comprehensive results through thick descriptions (Patton, 2002) and discussions of cross-case themes, respectively. Results of this study lead the researcher to conclude that EASs are significant in teacher education programs, and the results reveal that the critical issues regarding EAS adoption relate to (1) technology mandates by NCATE, (2) the issues of change and innovation
diffusion as they relate to individuals and organizations, and (3) the standardization effect of EASs on assessment.
Webster’s New World College Dictionary (2004) presents a number of varying definitions for change. One variation presents the meaning of change as “to become different; alter, [or] vary” (p. 245). A new innovation, idea, strategy, or technique presents the opportunity for change, the opportunity to alter what is currently in place. Change is sometimes radical, and, sometimes, it is marginal. Whether its influence is substantial or slight, its potential to directly affect individuals and organizations is all but guaranteed. It will solicit individuals to stray from or revamp their current practices, and it will encourage organizations to do the same. Regardless of its impact on an individual’s or an organization’s current practices, the goal of a proposed change is to improve a current situation. That improvement may be intended to address a detrimental situation, or its purpose may be to enhance positive conditions that already exist.

The onset of a change initiative must be instigated by something that catalyzes an opportunity for improvement or enhancement. Examples of catalysts are individuals, theories, models, current trends or issues, or mandates. In a change initiative, the catalyst contributes to the rationale and justification for the change. The responsibility of defending the rationale and justification that are guided by the catalyst rests with the change agent.

A change agent is “an individual who influences clients’ innovation-decisions in a direction deemed desirable by a change agency” (Rogers, 2003, p. 27). The change agent is thus responsible for the change. Literature relating to change and change agents consistently identifies a change agent as an individual involved with the change initiative (Kezar, 2005; Rogers, 2003).
Innovations are regarded as tools or practices that lead to change. In science, one could consider a microscope to be an innovation. The introduction of the microscope in science provided scientists with a tool to examine living organisms on microscopic levels, which led to revolutions in biology, chemistry, medicine, and other disciplines. In manufacturing, Henry Ford’s assembly line concept revolutionized the practices that had been employed in production industries. In education, similarly, technology has enabled teachers to reform instructional practices and change the manners in which students learn.

Teacher educators, those professional educators who are responsible for preparing individuals to assume the roles of teachers, represent a population of professionals whose daily responsibilities require them to be flexible, open-minded, and motivated. They must be flexible because state and federal mandates and expectations of the education they are providing are revised on a regular basis. They must be open-minded because, while they may not always agree with these mandates and expectations, acceptance is usually expected. Finally, they must be motivated because flexibility and open-mindedness are moot if a complacent individual is confronted with a new situation that will require him or her to stray from a “comfort zone.” A complacent individual, a complacent educator, even though he or she may be a well-respected and seasoned practitioner, may exhibit attitudes and possess characteristics that prevent him or her from being receptive to new ideas and having the desire to address and implement those ideas.

Innovations, new ideas, new strategies, and new techniques are not unusual in education. Professional educators are accustomed to local, state, and federal officials and agencies presenting them with new practices to implement or new content to deliver. An educator who is receptive to change is usually one who works diligently to adjust instructional
strategies to provide the best service to his or her students (Fullan, 1993). One such example in teacher education is the results of standards set forth by professional accrediting agencies.

The National Council for Accreditation of Teacher Education (NCATE) has worked to ensure quality in teacher education programs on university campuses since its inception in 1954. Its mission, scope, and goals all work in concert to address the broad issue of teacher education in the United States (NCATE, 2006).

The NCATE accreditation process is based upon six standards assigned to one of two categories that identify key aspects of a teacher education program. The standards define measurable criteria for (1) candidate performance and (2) unit capacity. Two candidate performance standards—candidate knowledge, skills, and dispositions; and assessment system and unit evaluation—address the expectations of the content teacher education candidates learn and the skills they are able to demonstrate. The four unit capacity standards address (1) field experiences and clinical practice; (2) diversity; (3) faculty qualifications, performance, and development; and (4) unit governance and resources; they also outline how a unit seeking accreditation should demonstrate its infrastructure and procedures that are used to administer teacher education programs (Wise, 2005).

To reflect the changes in and needs of pre-kindergarten through twelfth grade education in the United States, NCATE’s Professional Standards for the Accreditation of Schools, Colleges, and Departments of Education are reviewed and revised regularly. The current version of the Standards was released in 2006, the first revised draft of the 2002 edition of the Standards, which were the first edition of the 21st century’s Standards.

Schools, colleges, or departments that confer degrees leading to teacher certification constitute the university units that pursue NCATE accreditation. By these units attaining accreditation, the degrees they confer reflect teacher education programs that are deemed
“quality” and have been scrutinized under the same criteria as other programs at other universities to ensure that candidates’ performance satisfy specific criteria. Graduates who hold degrees from NCATE-accredited teacher education programs possess credentials that are recognized nationwide (NCATE, 2006; Wise & Liebbrand, 2000).

A defined expectation of NCATE’s Standard 2 is that units seeking accreditation have systematic, reliable, and valid procedures for assessing (i.e., tracking) teacher education candidates as they progress through teacher education programs. NCATE’s Standard 2 states that a unit must have “an assessment system that collects and analyzes data on applicant qualifications, candidate and graduate performance, and unit operations to evaluate and improve the unit and its programs” (NCATE, 2006, p. 21). The scope of this assessment involves practices that expand beyond course-based assessment. In order to assess the performance of candidates throughout teacher education programs, tracking procedures are initiated that enable the NCATE units to examine assessment artifacts pertinent to entire programs rather than those that are course-specific.

NCATE’s Standards revised the pre-2002 criteria for units seeking NCATE accreditation for their teacher education programs. The revised standards require universities to examine the quality of their teacher education programs and the dispositions of candidates to determine if candidates are “the right type of people” to be teachers (Chesler, et al., 2002; “Performance, Not Seat Time, Focus of New NCATE Standards,” 2000). This process initiated an era of change in NCATE-accredited teacher education programs in the United States. The accreditation now had new criteria, and universities seeking accreditation were required to employ the necessary adaptations to validate the quality of their teacher education programs under the Standards.
In teacher education programs, the NCATE’s Standards facilitated an era of change because the processes and tools to which organizations had become accustomed were altered (Hannan, 2005; “Providing a Common Language for Understanding Organizational Change,” n.d.).

NCATE’s Standard 2, Assessment System and Unit Evaluation, requires that university units seeking NCATE accreditation provide evidence that a systematic, reliable system is in place to evaluate candidate performance and program quality in all teacher education programs. Fulfilling the requirements of Standard 2 can be expeditiously mediated through technology; therefore, an electronic assessment system is a logical response to the popularity of technology and its infiltration into education.

A vast body of literature on technology integration is available in many disciplines of academia. Technology integration is a concept that describes how an individual educator enhances his or her teaching with technology. This enhancement is the result of extensive training, planning, and testing to determine what technologies are most appropriate for the discipline with the goal of presenting students with richer learning experiences that yield greater academic achievement.

Technology diffusion, synonymously, is a term that is often used to describe the “integration” of new technologies through individuals throughout an organization rather than strictly in an individual educator’s teaching or an individual employee’s daily work.

Reviewing current and historical literature on technology diffusion is likely to elicit scholarly writing by Everett Rogers, who is widely published on the topic of technology diffusion and its effects on organizations. Throughout his work, Rogers presents substantial rationales for and examples of technology diffusion in many disciplines, not limiting its use to
education. Much of his work is based upon a theory and model he developed to address the diffusion process.

The Innovation-Decision Theory is the result of Rogers’ extensive inquiries into the diffusion of an innovation across an organization. Accompanying Rogers’ theory is a detailed review of the influence of change and the role of the change agent in the innovation-decision process. The theory is complemented by a model (see Figure 1.1) that outlines the steps in the innovation-diffusion process.

Figure 1.1 Basic Components of Model Representing Rogers’ Innovation-Decision Theory (Rogers, 2003)

Rogers’ work is a classic example of theory-into-practice. His Innovation-Decision Theory is represented in a body of literature that reflects conceptual rationales and empirical study results. In short, his theory is comprehensive to the extent that it presents the process of diffusing an innovation throughout an organization from the most rudimentary to the most complex considerations and processes while providing evidence and justification for each component. His most recognizable work, the book entitled Diffusion of Innovations, first published in 1967 and the most recent edition released in 2003, presents his theory and model with all supporting details as appropriate.

Diffusion of Innovations has served as the catalyst for a wealth of research in nearly all disciplines that are heavily influenced by issues of change that result from the introduction of an innovation. The most common issue of change in an organization is one that introduces a new technology, but innovations are not limited to technology. Simply, an innovation is a tool
(i.e., procedure, equipment, technique, or strategy) that is introduced to enhance, improve, or revolutionize the manner in which an organization fulfills its mission.

Education is one discipline in which applying the Innovation-Decision Theory is perpetual. An innovation results in change. Change in education is inevitable, and Rogers’ theory outlines the procedures for introducing, implementing, managing, and sustaining the change. In education, many changes have reflected the introduction of new technological innovations.

The introduction of a new technology innovation presents professional development opportunities for those involved. In education, teachers should not be expected to implement a new technology without appropriate faculty development opportunities related to the technology and adequate, continuous support for it. According to Kerr (2005), educational agencies invest time and effort into technology integration. However, insufficient support for technology adversely affects the investment. A newly introduced technology is slated for failure when the introduction is not accompanied by comprehensive yet concise training that prepares faculty members to utilize the technology in their instructional practices.

Technological innovations that are diffused across an organization represent an innovation for which professional development opportunities should be made available. An electronic assessment system is one tool that represents the characteristics of a technological innovation that has been diffused in NCATE-accreditation-seeking units on university campuses. One goal of electronic assessment system diffusion is to integrate it into the assessment system (i.e. assessment plan) of a university’s teacher education programs so that it may be used for, primarily, systematic, continuous assessment of teacher education candidates through the use of electronic portfolios. Portfolios are one of the most popular methods of assessment for a number of reasons, one primary reason being that they are capable of

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representing a candidate assessment continuum (Hill, 2002). Electronic portfolios have become popular because they permit learners to include an array of artifacts, including those that are electronic, which contrasts the capabilities of the traditional paper-based portfolios.

This systematic, continuous assessment of teacher education candidates, combined with other assessment measures outlined in the assessment system, allows an NCATE unit to track and evaluate candidates’ performance as they progress through teacher education programs. In a sense, it allows the unit to construct and maintain a continuum. This comprises a complex system of continuous assessment that extends beyond an individual faculty member or an individual academic department. Such a system elicits the participation of individuals across all teacher education programs. Padgett & Conceição-Runlee (2000) posit that successful faculty participation is contingent upon successful professional development and support. Thus, professional development infrastructure is necessary to prepare individuals (i.e., all parties involved in teacher education programs) to integrate electronic assessment systems into the NCATE assessment and accreditation process.

Organizational change, NCATE accreditation, and technology diffusion are three research areas that contribute to the examination of an electronic assessment system’s use on university campuses. “Success is reached only when innovations embed themselves into the internal culture, transition successfully and lead to overall betterment of organisational [sic] conditions” (Fullan, 1982, as cited in Porter, 2005). Successful change, therefore, is mutually accepted throughout an organization and contributes to the advancement of the organization and its mission. Improving the quality of teacher education preparation is one aspect of NCATE’s mission. NCATE strives to ensure quality through the standards it sets forth. In some cases, the standards highlight the practices in a university’s teacher education programs; in other instances, they institute and necessitate change. Regardless of the circumstances, the
standards are used as criteria for judging programs, ultimately leading to the imposition of a “quality” stamp on the teacher education programs. Technology diffusion describes the process of implementing a mutually-accepted technological innovation, especially implementation across an organization. Rogers (2003) sets forth a model for this process in which he outlines the steps involved from analyzing the innovation through implementing the innovation and concluding with participants’ confirmation or acceptance of the innovation. Such a model advocates change, and an electronic assessment system, while serving as a support tool for teacher education programs pursuing NCATE accreditation, is an appropriate innovation to which the principles of innovation diffusion can be applied.

Statement of the Problem

Presenting new technologies seems to have become a perpetual practice in today’s technology-driven society. These technologies are created and introduced to the intended audiences, and the expected result of introducing new technologies is to change a current practice. Unfortunately, however, the introduction of an innovation is not always preceded or accompanied by an implementation protocol to support it.

The lack of acceptance or buy-in from participants in a change process can be detrimental because participant involvement is imperative to success. Regardless of the environment where the change process involving an innovation occurs, appropriate professional development, stakeholder input, and support before, during, and after the introduction of the innovation are essential. The absence of these holds the potential to reveal system administration, implementation, functionality, and diffusion issues, some issues that are common to multiple universities and some that are university-specific.

The need to examine the successes and challenges faced by each institution is prevalent, and this examination would yield a comprehensive case study of the perceptions regarding
electronic assessment systems in teacher education programs and the factors and issues that mold those perceptions.

Purpose of the Study

The use of electronic assessment systems in teacher education programs is believed to be paramount. Universities may elect to use commercial systems for assessment purposes, or they may choose to use locally-developed and maintained systems. For this reason, with the assumption that all universities use electronic assessment systems to some extent, each university customizes its requirements and procedures for the electronic-mediation of teacher education candidate assessment.

This study examined adoption and implementation practices of selected universities, factors that impact the successes and challenges of those implementation practices, and the effects of the confluence of the adoption practices and implementation factors on assessment. Furthermore, the study delved into the significance of selected innovation diffusion factors as identified in current, scholarly literature. Data were analyzed to construct case studies of three selected institutions. The case studies serve to portray the effects of an electronic assessment system at each institution thereby highlighting the innovativeness of each institution and contrasting the innovativeness of the three institutions.

Research Questions

RQ 1: What factors and processes do faculty and assessment coordinators perceive can facilitate or hinder the diffusion of an electronic assessment system in teacher education programs?

RQ 1a: How do faculty and coordinators perceive an electronic assessment system as a change agent in teacher education programs?
RQ 1b: How do faculty and coordinators believe that the diffusion of an electronic assessment system affects the assessment of teacher education candidates?

RQ 1c: What procedures and practices utilized demonstrate the extent of an electronic assessment system’s use in teacher education programs?

Significance of the Study

Current literature on change identifies a change agent as the individual who is essentially responsible for facilitating the change. This study will demonstrate that an innovation in the change process can be the causal factor for facilitating the change.

An innovation, specifically referring to technological innovations, is the vehicle that facilitates the change in an organization. An individual may administer or coordinate the innovation, but he or she should not necessarily be deemed the change agent. An individual will reap the benefits of an innovation, but the innovation itself may be the impetus in a change initiative that is ultimately responsible for the change.

Expanding on the general issue of change, the study will reveal positive and negative effects, advantages, and challenges of electronic assessment systems and how the systems have the potential to improve the quality of education provided to teacher education candidates. The system of assessing students at the defined transition points in teacher education programs is the method employed by universities in response to NCATE’s Standard 2, which outlines the requirements of the unit to utilize a system for valid and continuous candidate assessment to judge candidate performance and improve program quality.

The American Educational Research Association’s AERA Draft Standards for Reporting on Research Methods identifies four standards by which a study may contribute to the existing knowledge base in an area of research (pp. 2-3). In response to Standard 1.2.a., this project serves to contribute “to an established line of theory and empirical findings...[and]
make clear what the contributions are and how the study contributes to testing, elaborating, or enriching that theoretical principle” (p. 3). Rogers (2003) presents his Innovation-Decision Process Model and accompanying theory on innovation diffusion as they relate to individuals and organizations. His model that demonstrates the relationship between innovations and organizations defines five stages of innovation diffusion. This study seeks to apply Rogers’ theory within the context of electronic assessment systems in teacher education programs. To date, no relevant research relates Rogers’ model to this context; therefore, this study seeks to contribute to the substance of the theory in this emerging context.

Limitations of the Study

The study will examine selected aspects of electronic assessment systems as they relate to change, technology diffusion, and teacher education accreditation at selected universities. One limitation of the study is its research design. The qualitative nature of this study limits—but does not eliminate—the findings’ capacity to be generalized in all higher education settings.

A second limitation relates to the population sample examined in the study. Faculty and assessment coordinators from randomly selected universities will be solicited to participate in the study. While the universities will be selected randomly, the sample will not include all universities that confer degrees leading to teacher certification.

Subjectiveness of survey data presents a third limitation. The study will employ a data collection instrument (i.e. interview protocol) containing items that address the research questions. Participation in the study will be voluntary, and faculty and assessment coordinators who choose to participate may not respond to items in completely unbiased manners. This issue presents the concern that data results may be skewed.
Definitions of Terms

Board of Examiners (BOE): A pool of teacher education faculty from NCATE-accredited institutions from which members are selected to participate in the peer review process for institutions seeking accreditation or reaffirmation of accreditation. The BOE institutional team prepares a report following an on-site institutional visit, and that report is used as the foundation of the Unit Accreditation Board’s decision regarding the institution’s accreditation status.

Change agent: The individual or force that is responsible for facilitating a change initiative.

Change initiative: A time during which an organization implements an innovation to improve, enhance, or reconstruct the manner(s) in which current practices are implemented or current theories are viewed.

Electronic Assessment System (EAS): A World Wide Web-based technology application used by faculty and students in postsecondary teacher education programs for assessment, evaluation, data collection, and data management.

Innovation: A strategy, technique, or tool that is introduced into an organization to yield a greater and more valuable experience for all parties involved.

Innovation diffusion: The process of introducing, implementing, managing, and sustaining an innovation in an organization.

Professional Education Unit (NCATE unit; Unit): The unit (all faculty, staff, departments, colleges, and/or schools) in an institution of higher education that is seeking NCATE accreditation; the unit coordinates and administers teacher education programs.
Technology integration: Thoroughly planned strategies by an educator to enhance student learning by utilizing technology in instructional practices; thoroughly planned strategies by an individual to enhance his or her job performance by utilizing technology.
CHAPTER 2
LITERATURE REVIEW

Introduction

The concept of change dominates the scope of the body of literature reviewed in this study. Change is defined as a process that alters or varies (Webster’s New World College Dictionary, 2004). That definition can be integrated into the nature of the elements presented in this literature review.

The National Council for Accreditation of Teacher Education (NCATE) is an organization whose purpose is to ensure quality in postsecondary teacher education programs. By setting forth standards to which programs seeking accreditation must comply, the organization promotes, facilitates, and in some cases requires change initiatives through the enforcement of these standards.

Research in innovation diffusion, similarly, calls for change. Reviews of current studies and conceptual writings present an emergence of examples in which innovations introduced into various fields of study have led to evolutions in those fields. If the results were not evolutions, at the very least the innovations facilitated some extent of change to alter existing practices and procedures.

Lastly, technology contributes to change. In most circumstances, the introduction of technology results in the alteration of existing conditions. Many tasks can be accomplished without technology, but technology has proven to be a catalyst for change to improve, among other factors, efficiency and quality time and time again.

This literature review presents details of these elements as they relate to the effects of selected technologies in teacher education programs. NCATE, innovation diffusion, and
technology contribute to and often instigate processes of change in individuals’ and organizations’ practices. Those pertinent to teacher education programs are highlighted here.

Change

Engaging others in the process of change requires persistence in order to overcome the inevitable challenges—to keep on going despite setbacks—but it also involves adaptation and problem-solving through being flexible enough to incorporate new ideas into strategizing. (“Learning to Lead Change,” 2004, p. 8)

Change is a force that impacts all elements of an organization, of a system. It is sometimes seen as evolutionary, self-organizing, and unifying. The systemic change process involves a reframing of resources and necessitates the need to learn from other systems in the environment. Paradigm shifts in education have resulted in continuous change, and the change has affected the values and cultures of the institutions (Browne, 2005; Chih-hsu Ou-I, 1987; Gill & Griffith, 2004; Johnson, 1997; Morrison, 1998).

Catalysts for Change

Change efforts are often sparked by local, state, and federal initiatives. In public education, the impetus for change stems from global competition pressures. Historically, change efforts were meant to increase access to education. Recent efforts focused on addressing challenges of the future (Gill & Griffith, 2004; Johnson, 1997; Nunnery, 1998).

Reigeluth (1993) reported that schools are in ongoing transitions. They are continually working to meet societal needs and expectations. The thrust of change is often accelerated to the point that participants are overwhelmed, and many lose faith in the change due to its overwhelming nature (Gill & Griffith, 2004; Reigeluth, 1993).

Effects on relationships, structures, and behavior patterns are examined in change processes (Fullan, 1993; Nunnery, 1998). With the goal of change being systemic transformation, partial consideration of change elements by only select members of an
organization may work against the initiative. The success of a change initiative is dependent upon the incorporation of all members’ positive cooperation (Gill & Griffith, 2004).

Pascopella (2005) quotes Chris Dede, a professor of learning technologies at the Harvard University Graduate School of Education, as stating that “technology is a catalyst for educational transformation” (p. 52). The untapped potential of technology represents unrealized benefits to education. Dede notes that the challenge is not to put technology on the forefront but to help people focus on important components of a process, like models, assessment, and accountability. The technology, Dede notes, will follow. Recent literature agrees (Gill & Griffith, 2004; O’Neil & Baker, 2000; Surry & Land, 2000).

**Driving Change**

Successful change is dependent upon the “understanding and insight about the process of change and the key drivers that make for successful change in practice” (“Learning to Lead Change,” 2004, p. 2). This understanding is referred to as change knowledge (“Learning to Lead Change,” 2004).

Change knowledge generally refers to the knowledge one possesses about the change process and actions needed to facilitate and implement such a process. The eight key drivers of change “capture the essence of what is meant by ‘change knowledge’” (“Learning to Lead Change,” 2004, p. 14). Speculation can be posed that when the essence of change knowledge is grasped and its centrality to success is realized, its chances of being integrated into future practices are increased substantially (“Learning to Lead Change,” 2004).

The initiative between Michael Fullan and Microsoft’s Partners in Learning (2004) posits eight elements of change that are defined as key drivers. They are:

1. Engaging peoples’ moral purposes
2. Capacity-building
3. Understanding the change process
4. Developing cultures for learning
5. Developing cultures for evaluation
6. Focusing on leadership for change
7. Fostering coherence-making
8. Cultivating tri-level development

Engaging Peoples’ Moral Purposes

Searching for moral purpose in educational change is essentially a reflection of the desire to improve society and learning. It involves increasing expectations of students to yield greater achievement. Emphasizing moral purpose and placing it at the forefront of a change initiative presents a window of opportunity for the remaining key drivers (“Learning to Lead Change,” 2004).

Capacity-Building

Building capacity “involves policies, strategies, resources and other actions designed to increase the collective power of people to move the system forward” (“Learning to Lead Change,” 2004, p. 4). Capacity-building yields the development of new knowledge, skills, competencies, and resources and the presence of shared identity and motivation. A lack of capacity for change works against the change initiative (Gill & Griffith, 2004; “Learning to Lead Change,” 2004).

Understanding the Change Process

Understanding the change process is imperative to the change initiative. It is one of the drivers that facilitates the initiative, and it is sometimes the most difficult aspect of the change process to understand (“Learning to Lead Change,” 2004).
In “Learning to Lead Change” (2004), the authors present six elements required to understand the change process. They note the elements as:

- Strategizing versus strategy, which helps participants evolve and augment ideas and actions,
- Pressure and support, which allude to the need for actions that elicit responses,
- “Implementation dip” knowledge, which provides insight into the idea that a decline in the process’s momentum may occur,
- Fear of change understanding, which enables those involved to appreciate the difficulties in mastering the implementation of change,
- “Technical problems” and “adaptive challenges” distinctions, which allow for issues to be addressed in the most appropriate manners, and
- Persistence and resilience, which encourage participants to stay the course and see the change effort through to fulfillment

Developing Cultures for Learning

A culture for learning is one in which learning communities are constructed and lateral capacity building is encouraged (“Learning to Lead Change,” 2004).

Newmann, et al. (2000) identified that new cultures of learning be developed in order for implementation to occur. They identify five components necessary to build capacity for a new culture of learning as (1) developing new knowledge and skills, (2) establishing professional learning communities, (3) ensuring program coherence, (4) providing access to new resources, and (5) maintaining local leadership.

Developing Cultures for Evaluation

Evaluation, a process, and technology, a tool, are complementary. The influence of technology and its potential to affect evaluation measures and procedures present a powerful
confluence. A culture of evaluation, or a culture for evaluation, expands on what assessment is meant to accomplish when it is accompanied by technology (“Learning to Lead Change,” 2004).

**Focusing on Leadership Exchange**

“Effective leaders foster leadership in others” (“Learning to Lead Change,” 2004, p. 11). Leading change necessitates change knowledge. An effective change leader not only promotes the change initiative but also elicits innovative behavior and support from others (“Learning to Lead Change,” 2004).

**Fostering Coherence-Making**

As with other drivers, change leaders must possess change knowledge. Melding change knowledge, cultures for learning and evaluation, and effective leadership promotes greater coherence that enables participants to focus on the change process elements that are complementary (“Learning to Lead Change,” 2004; Sherry, et al., 2000).

**Cultivating Tri-Level Development**

Participants in the change process must realize that change is systemic, affecting a system rather than an individual or a single process. Fullan and the Microsoft Partners in Learning (2004) contributors denote a three-tier approach to cultivating change. First, what must happen at the school and community levels must be examined. Second, the actions needed at the district level must be examined, and, finally, necessary state-level actions must be examined. Together, these three tiers comprise the domains of an educational system from which support is necessary for an initiative to be successful. While this tri-level approach is rooted in P-12 education, its premise is also pertinent in higher education. As Fullan (2004) notes, “we need to develop better individuals while we simultaneously develop better organizations and systems” (p.13).
Change Agents

Change agent is a term commonly used to refer to the individual in the change process who is responsible for facilitating (i.e., coordinating or directing) the change initiative. This person is “the face” associated with the change. He or she is the individual to whom questions and concerns are posed, and he or she is the individual who coordinates the efforts of the participants to demonstrate the desired results from the process (Kezar, 2005; Rogers, 2003).

The change agent serves a number of roles in the change process. Perhaps the most significant is the role of facilitating “the flow of innovations from a change agency to an audience of clients” (Rogers, 2003, p. 368). This communication must precede the innovation’s introduction and continue to solicit client input throughout the process in order for buy-in to occur (Rogers, 2003).

Rogers (2003) establishes seven roles of a change agent in a change process. These are identified as:

1. Developing a need for change
2. Establishing an information exchange relationship (i.e., rapport) with clients or participants
3. Diagnosing problems
4. Creating an intent to change in the client
5. Translating the client’s intent into action
6. Stabilizing adoption and preventing discontinuance of the change
7. Achieving a terminal relationship with the client.

These seven roles present an ideal. The client-change agent relationship may not always adhere to these roles; however, a change initiative, like that of an innovation diffusion initiative, is ineffective without the fulfillment of these roles.
As with any initiative, the outcome is contingent upon the effort put forth toward its success. In change initiatives for innovation diffusion, the success of an innovation is usually measured by the level of client adoption. To promote a positive outcome, clients must perceive that an innovation positively relates to their needs. For this reason, an effective information exchange (i.e., communication) network between the client and the change agent must be established early in the relationship. A breakdown in the communication between a client and a change agent directly affects the outcome of a change initiative, and that outcome is usually a less than satisfactory level of innovation adoption, which reflects a lack of innovation diffusion. Change agents are responsible for this adoption, and their successes are measured by the strength of this dependent variable (Rogers, 2003).

National Council for Accreditation of Teacher Education (NCATE)

NCATE Mission

Ensuring that America’s schools are equipped with qualified, competent, and caring educators is central to NCATE’s mission. This body represents more than 30 education associations with appointees who serve on policy boards that work to develop, revise, and implement the standards for teacher education accreditation. These standards are used in evaluating the quality of teacher education programs in schools, colleges, and departments of education in the United States. The schools, colleges, or departments, referred to as Professional Education (or NCATE) Units, seeking accreditation must justify through written reports, peer interviews, program reviews, and other assessment measures that the Unit’s teacher education programs satisfy and adhere to the outlined accreditation standards (NCATE, 2006).

Parallel to NCATE’s mission to improve teacher quality is its mission to provide leadership for teacher education reform. NCATE encourages program improvement that is
based upon accurate and consistent data generated through continuous and systematic means. Reflecting on internal evaluations provides a college or department with the data necessary to improve programmatic quality and, thereby, improve pre-kindergarten through twelfth grade (P-12) education (NCATE, 2006).

**Overview of NCATE Standards**

Universities’ institutional reports present the justifications and rationales that define how the institutions satisfy NCATE’s *Professional Standards for the Accreditation of Schools, Colleges, and Departments of Education*. In addition to addressing each Standard, the institutional reports must present the Unit’s conceptual framework, and it is expected that the evidence will reflect the conceptual framework’s integration throughout the Unit’s rationales for satisfying each Standard (NCATE, 2006).

Beyond the conceptual framework, two categories comprise the major divisions of the six Standards for accreditation. These categories, Candidate Performance and Unit Capacity, outline the two major foci of the Standards.

Learning outcomes is the focus of the two Candidate Performance Standards. Assessing candidates’ knowledge, skills, and dispositions as they relate to the enhancement of P-12 education is expected through these standards. As noted in NCATE’s *Professional Standards for the Accreditation of Schools, Colleges, and Departments of Education* (2006), “the standards elevate the role of assessment in program improvement and promote increased accountability for teacher candidate learning” (p. 9). The Standards require reliable and systemic assessment procedures that ultimately are used to improve program quality (NCATE, 2006).

Rubrics are presented for each Standard. Each rubric outlines expectations of the Unit as they relate to the Standard, and each rubric’s scale is three-tiered. The scale varies from
“unacceptable,” which designates a criterion for which the unit has not provided adequate evidence of achievement, to “acceptable,” which designates that the unit’s evidence is satisfactory but not exemplary, and, finally, to “target,” which indicates that the unit meets or exceeds the Standard’s expectations (NCATE, 2006).

The Candidate Performance Standards of the NCATE Standards are identified as Standard 1: Candidate Knowledge, Skills, and Dispositions and Standard 2: Assessment System and Unit Evaluation. Standard 1 requires units to identify assessments that judge whether candidates demonstrate the knowledge, skills, and dispositions that are necessary to help learners of all cultures and abilities learn. These assessments are expected to reflect institutional, professional, and state standards. Standard 2 requires that units institute an assessment system that collects and analyzes data on candidate performance and unit operations (NCATE, 2006; Wise, 2005), and this Standard is related most closely with the study presented here.

Standard 2: Assessment System and Unit Evaluation

Each of NCATE’s six Standards requires that the Professional Education Unit implement evaluation measures for each criterion presented in the Standards. Standard 2: Assessment System and Unit Evaluation, however, is the one Standard that outlines the criteria for the Unit’s assessment and evaluation methods. The criteria for Standard 2 are categorized into three areas: assessment system; data collection, analysis, and evaluation; and use of data for program improvement (NCATE, 2006). Table 2.1 lists what Units are expected to reflect for each of the three areas.
Table 2.1  NCATE Standard 2’s Expectations of Professional Education Units (NCATE, 2006)

<table>
<thead>
<tr>
<th>Assessment System</th>
<th>Data Collection, Analysis, and Evaluation</th>
<th>Use of Data for Program Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incorporates professional community input</td>
<td>Maintains comprehensive candidate performance data</td>
<td>Uses data regularly and systematically</td>
</tr>
<tr>
<td>Reflects conceptual framework and Standards</td>
<td>Uses multiple internal and external assessments</td>
<td>analyzes program evaluations and performance data for program changes</td>
</tr>
<tr>
<td>Outlines comprehensive evaluation methods</td>
<td>Maintains records of formal candidate complaints and resolutions</td>
<td>Shares data with stakeholders to advise candidate and faculty performance improvement</td>
</tr>
<tr>
<td>Facilitates candidate performance monitoring</td>
<td>Analyzes and implements data regularly and systematically for program improvement</td>
<td></td>
</tr>
<tr>
<td>Allows for decisions based on multiple assessments</td>
<td>Maintains assessment system through use of information technologies</td>
<td></td>
</tr>
<tr>
<td>Integrates assessments into decision-making</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Works to eliminate bias and establish fairness, accuracy, and consistency</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The categories of data expected to satisfy Standard 2 criteria can be identified as those related to candidate performance and the Professional Education Unit. A review of Standard 2’s criteria will yield types of evidence that should be presented, and those are delineated by type in Table 2.2. It should be noted that these types are not exclusive to the category under which they are noted in Table 2.2 (NCATE, 2006).

Table 2.2  Categories of Assessment Data and Types of Evidence (NCATE, 2006)

<table>
<thead>
<tr>
<th>Evidence Related to Candidate Performance</th>
<th>Evidence Related to the Professional Education Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alignment to local, state, and national standards</td>
<td>Collaboration with the professional community</td>
</tr>
</tbody>
</table>

(Table 2.2 continued)
Continuous assessment | Credibility in assessments
---|---
Multiple assessments | Evaluation criteria
Multiple decision-points | Systematic use of data for program improvement
External data use | Multiple measures to determine Unit performance

Technology’s role in NCATE accreditation is increasingly prevalent. NCATE has begun to require Units to meet their professional responsibilities of collecting, analyzing, and utilizing data through technology-mediated means. The technology is expected to play a significant role in how Units carry out their assessment procedures, and it is expected to contribute substantially to all assessment, planning, and evaluation (NCATE, 2006).

Innovation Diffusion

Hannan (2005) discusses the impact of innovations on education, namely how they are regarded in terms of change. He states that:

Innovation is often seen in terms of technological change, of some new gadget or software that will transform learning and teaching. The assumption seems to be that innovation is always a good thing and that it normally involves some new, usually computerized [sic], technology. (p. 975)

Innovation Diffusion and Individuals

Everett Rogers is one of the most influential researchers in innovation diffusion, and his work, *Diffusion of Innovations*, through five editions, presents one of the most comprehensive and popular models of adopting innovations (Sahin & Thompson, 2006; Sherry & Gibson, 2002). In *Diffusion of Innovations*, Rogers presents his Innovation-Decision Process Model (see Figure 2.1) that outlines the diffusion process from planning through sustaining an innovation.
Figure 2.1 Innovation-Decision Process Model (Rogers, 2003, p. 170)

The comprehensiveness of the book provides information that is complimentary to the model (Rogers, 2003; Surry & Ely, 2002). His theoretical framework on innovation diffusion has been applied extensively in technology adoption research (Dooley, 1999; Stuart, 2000, as cited in Sahin & Thompson, 2006). Medlin (2001) and Parisot (1995) suggest that Rogers’ framework is the most appropriate for technology adoption in higher education.

Categories of adopters, or diffusers *per se*, the distribution of categorized adopters from a given population, and the rate of diffusion growth are included in *Diffusion of Innovations* (Surry & Ely, 2002). Rogers (2003) outlines the five adopter categories and the proportions of each category are presented on the traditional bell-shaped distribution curve.

Figure 2.2 Categories of Adopters and Proportions Based on Innovativeness (Rogers, 2003, p. 281)
Table 2.3 presents Rogers’ categories and brief descriptions of the categories that define the type of individual each category represents.

**Table 2.3 Categories of Innovation Adopters (Rogers, 2003; Surry & Ely, 2002)**

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovators</td>
<td>Individuals who readily adopt innovations and who are motivated to implement them.</td>
</tr>
<tr>
<td>Early Adopters</td>
<td>Individuals who fall just behind Innovators in aptitude for adoption and rate of implementation.</td>
</tr>
<tr>
<td>Early Majority</td>
<td>Individuals who are hesitant to adopt an innovation but eventually accept it after reluctance subsides.</td>
</tr>
<tr>
<td>Late Majority</td>
<td>Individuals who are resistant to innovation adoption and gradually and reluctantly accept the innovation after nearly all others have.</td>
</tr>
<tr>
<td>Laggards</td>
<td>Individuals who resist the innovation and often avoid adoption. Adoption sometimes occurs after pressures to adopt surpass resistance.</td>
</tr>
</tbody>
</table>

Surry & Ely (2002) indicate that implementation is significant and should play a prominent role in the change process. Eight conditions were found to provide a foundation and rationale to support the implementation process (Allison & Scott, 1998; Ely, 1999; Miller, et al., 2000; Sherry, et al., 2000). The conditions are identified as:

- Status quo dissatisfaction, where individuals determine that the current situation is not adequate and has the potential for improvement;
- Presence of knowledge and skills, where those who will utilize the innovation possess either the knowledge necessary to use the innovation or the aptitude to acquire the knowledge;
- Resource availability, where an organization provides the resources necessary for implementing the innovation;
• Time availability, where individuals are provided “on the job” time to dedicate to the implementation of the innovation and are not expected to exhaust only personal time to the initiative;

• Compensation availability, where individuals are presented with compensatory measures to foster support and participation either through direct (i.e., stipends and release time) or indirect (i.e., recognition) methods;

• Participation, where individuals are involved in planning and decision-making related to the implementation;

• Commitment, where insurances of buy-in and support are evident; and

• Leadership, where individuals know who is responsible for the innovation and its implementation.

Effective implementation promotes a smooth transition to institutionalization where the innovation becomes a component of individuals’ and organizations’ routines. The innovation is assimilated into the organizational culture and is no longer regarded as an innovation. Its utilization becomes routine and no longer an obstacle to overcome (Surry & Ely, 2002).

Ely (1990) studied these eight conditions. Structured interviews with educational technologists from selected cultures were conducted to examine the efficacy of these conditions. In the study, 25 individuals from each culture were interviewed. Interviewees each possessed 15 to 25 years of experience and responded to the conditions as they related to their experiences in their respective cultures.

The eight conditions can be used to describe the setting for implementation. To determine the status of a setting, one must determine which conditions exist and which conditions are absent or are present and require improvement. Organizations strive to maximize all conditions even though finding all conditions in a given environment is unusual. However,
the effectiveness of an implementation process could be diminished by the absence or only partial presence of any condition (Ely, 1990).

**Innovation Diffusion and Organizations**

While most literature focuses on the adoption and diffusion of an innovation as it relates to individuals, the adoption and diffusion of an innovation by an organization (i.e., a system of individuals working together to achieve common goals) is sometimes necessary before the adoption by an individual occurs (Rogers, 2003).

Rogers (2003) presents four types of innovation decisions that organizations address: optional, collective, authority, and contingent. Optional innovation-decisions are those made by individuals irrespective of the organization’s adoption or rejection of the innovation. Collective innovation-decisions are the result of an organizational group consensus where all parties involved agree to the same decision. Authority innovation-decisions are top-down decisions made by individuals with high status in an organization whose decisions outline what is required of others. Finally, contingent innovation-decisions have an effectual relationship with the other decisions in that they are made after one of the other three. An example that Rogers (2003) presents is one of a physician who chooses to implement a new medical procedure, but he or she can implement the procedure only after the decision-makers at the facility in which he or she works acquire the necessary equipment.

The innovativeness of an organization is dependent upon and analyzed in terms of a number of independent variables. These are identified by individuals’ characteristics, an organization’s internal characteristics, and an organization’s external characteristics. The category most often examined is the organization’s internal characteristics (Rogers, 2003).

Internal characteristics of an organization cogent to innovativeness are centralization, complexity, formalization, interconnectedness, and organizational slack. Centralization refers
to the degree to which a few individuals control the decision-making authority in an organization. While concentrated authority does not yield innovativeness, it has the potential to facilitate innovation implementation. A second characteristic is complexity. Complexity refers to the knowledge and expertise that an organization’s members possess. Formalization is a third characteristic of organizational innovativeness, and it identifies the extent to which an organization encourages members to adhere to rules and procedures. Interconnectedness refers to how units in a social system are connected to and by interpersonal networks. High levels of interconnectedness create a conduit for idea exchange. The final characteristic refers to a gap in the adoption process referred to as organizational slack (Rogers, 2003).

Organizational innovations often yield a champion. A champion is someone who lends charisma and enthusiasm to an innovation in order to overcome indifference or resistance (Rogers, 2003). Parallels can be drawn between champions and change agents. Rogers (2003) notes that champions do not need to be authoritative figures in an organization; they are influential figures without serving in authority capacities. Howell & Higgins (1990) examined champions and non-champions in organizational innovations, and they found that champions tended to be risk-takers and were innovative and influential. These characteristics permit them to lead organizational innovations.

The innovation process in organizations is complex and delicate. These results work to affect the dependent variable, which in organizational innovation is usually the level or rate of implementation rather than of adoption, in the process (Rogers, 2003).

Gerald Zaltman and colleagues’ 1973 book, Innovations and Organizations, forged a turning point in research on organizations and innovations. Zaltman and his fellow researchers describe the dependent variable in organizational innovation diffusion studies as having transitioned from being the adoption factor to the implementation factor. Research foci also
transitioned from examining multiple innovations in one organization to one innovation in one or multiple organizations (Rogers, 2003).

**Innovation Process in Organizations**

Rogers (2003) notes that decisions, actions, and events mark the main sequence in the organizational innovation diffusion process. Records of these are examined to judge the innovation process’s efficacy.

Rogers (2003) identifies five stages in the organizational innovation diffusion process.

![Figure 2.3 Innovation Process in Organizations (Rogers, 2003, p. 421)](image)

His five stages define the Innovation Process in Organizations from beginning to completion. The process is segregated by the “decision.” This decision is the decision of an organization to adopt or reject an innovation. These two major segments are referred to as initiation (pre-decision) and implementation (post-decision) (Rogers, 2003).

The pre-decision segment of initiation contains two stages: agenda-setting and matching.

Agenda-setting identifies the point at which a general organizational problem is defined, and it is the time in which the decision to explore an innovation is confirmed (Rogers, 2003).
At this stage, organizations (1) identify and prioritize concerns and needs and (2) examine the organization for potential innovations that could be used to address the identified concerns or problems (Rogers, 2003). Due to the nature of agenda-setting, initiation is time- and resource-consuming, and fulfilling this stage’s expectations cannot be done in haste (Schroeder, 1989).

Organizations often experience a performance gap during agenda-setting. Simply, a performance gap is the difference between an organization’s expected and actual performances. In some instances, a performance gap can be a catalyst for the innovation process because only when the gap exists do members of the organization realize what is not being accomplished (Rogers, 2003; Schroeder, 1989).

Agenda-setting is a powerful tool in the organizational innovation process, and effective agenda-setting can alleviate some issues like performance gaps and initiate problem-solving, solution-oriented behaviors (Rogers, 2003). March (1981) indicated that organizational innovations are often driven by solutions rather than problems; answers to questions are sometimes determined before the questions are fully developed.

The stage in the organizational innovation diffusion process where an organization’s problem is matched with an innovation is referred to as matching. Matching is a reality test. Organizational members work to determine if the innovation could feasibly remediate the problem(s) they have identified. Matching an appropriate innovation with a problem is key to sustaining the effect overtime (Rogers, 2003).

The matching decision marks the conclusion of the initiation segment of the process. At this point, the organization’s problem has been identified, an anticipated course of action has been outlined, and the innovation to address the problem has been selected by a consensus of organizational members (Rogers, 2003).
Successful completion of the initiation segment leads to addressing the stages of implementation.

Three stages of implementation are used to outline the process of diffusing a selected innovation into the culture of an organization. These three stages address organizational redefinition and restructure, clarification of relationships, and routinization of the innovation’s role.

The redefining/restructuring stage follows the decision to adopt a selected innovation. At this point, while the innovation may not be accepted widely, it is no longer foreign to the organization (Rogers, 2003).

Change is expected to occur after the innovation is introduced (Rogers, 2003). Organizational change is expected upon successful implementation; however, Tyre & Orlikowski (1994) found that only a small window of opportunity exists for innovation change after implementation begins.

An innovation’s implementation involves redefining an organization’s procedures and its internal structure. Often, the organizational structure is modified to accommodate the innovation (Rogers, 2003; Tyre & Orlikowski, 1994).

A period of clarification follows the introduction of an innovation. Organizational members sometimes need clarification of the innovation’s purpose after they have had time to adjust to its presence. Clarifying issues surrounding the innovation does not ensure the prevention of problems; however, it yields a greater chance that misunderstandings or unwanted side effects can be addressed efficiently (Rogers, 2003).

Essentially, clarifying allows the innovation to become embedded within the organizational culture, and the innovation’s meaning and purpose are defined within a social context with organizational members (Rogers, 2003).
Routinization of an innovation is achieved when its unique identity is lost. At this final stage, the innovation’s acceptance within the organization is widespread, and it has penetrated organizational procedures. Once routinization occurs, organizations must address the issue of sustainability, referring to the actions necessary to maintain the desired level of adoption (Rogers, 2003).

Technology Integration in Teacher Education

Education has experienced a technology proliferation, and Doering, Hughes, & Huffman (2003) present that the “need to educate preservice teachers about technology is an enduring issue” (p. 343). While its potential to impact learning is substantial, that potential is sometimes untapped (Miller, et al., 2000; Ouzts & Palombo, n.d.). Technology, however, is viewed as a valuable tool in educational reform and holds the potential to do much more than facilitate the migration of paper-based practices to electronically-mediated procedures (Johnson, Schwab, and Foa, 1999; Surry & Land, 2000).

Relevant literature on technology integration addresses the effects of change in organizational and technological contexts (Ehrmann, 1995; Gilbert, 1996; Green, 1996; Johnson, Schwab, and Foa, 1999). Chandler (1995) introduces the concept of technological determinism, which refers to the idea that technology is the impetus in social change, and Cavanaugh (2002) identifies technology as a challenge to traditions and practices. Sahin & Thompson (2006) demonstrate that too often in higher education technology is purchased and made available to faculty only to result in underutilization.

Perkins (1985) introduces the fingertip effect. The fingertip effect refers to the notion that simply availing organizational members of a technological tool will result in their acceptance and utilization of it. Three conditions, according to Perkins (1985), must exist for successful technology utilization to occur. Those are that the technology is available, the
participants recognize the availability, and the participants are motivated to take advantage of the technology.

In teacher education, universities have worked to infuse technology into coursework as well to as incorporate educational technology courses into existing curricula. Technology infusion, however, is difficult in teacher education just as in any other environment. Teacher education faculty, though, are expected to integrate technology to meet local, state, and national technology standards and expectations as well as those of NCATE (Strudler & Wetzel, 2005; Vanatta & Beyerbach, 2000), despite what barriers may exist.

It is noteworthy that in his synthesis of relevant literature, Kay (2006) presents numerous obstacles to effective technology integration in teacher education. Beyond that, further research presents other barriers as:

- allocation of resources (Doering, Hughes, & Huffman, 2003)
- cost to student (Hall, Kiggins, & Weimer, 2005)
- inadequacy in or lack of professional development (Hagenson & Castle, 2003; Matzen & Edmunds, 2007; McKenzie, 2001; Parisot, 1995; Sahin & Thompson, 2006)
- lack of knowledge and experience (Asan, 2002)
- lack of positive effects on student learning in teacher education programs (Rakes, Fields, & Cox, 2006)
- lack of support (Sahin & Thompson, 2006)
- lack of time (Lawson & Comber, 2000)
- shortages in either necessary or desired technologies (Johnson, Schwab, & Foa, 1999)
Marquardt & Kearsley (1999) state that a foundation for universities to provide learning environments in appropriate contexts is served by technology; moreover, Sahin & Thompson (2006), referencing Marquardt and Kearsley (1999), believe that technology integration in higher education “teaching and learning has become more and more important” (p. 81).

Radical changes in education are often the sought results of introducing technology; however, the changes sought are not always determined on the basis of meeting students’ needs. The technology often lacks the capability of developing lifelong learning dispositions within students that enable them to build upon and sustain the skills after the technology introduction concludes (Ouzts & Palombo, n.d.). Glennan & Melmed (1998) justify this issue by positing that “technology is a means to an end, not an instructional activity” (p. 23), and that is supported by Doering, Hughes, and Huffman (2003), who noted that learning should occur through—not from—technology. These issues are most pertinent in teacher education programs as the responsibility of those faculty is to prepare preservice teachers to utilize technology in their teaching.

Teachers and Technology: Making the Connection, a U.S. Congress Office of Technology Assessment report (1995), reported that “despite technologies available in schools, a substantial number of teachers report little or no use of computers for instruction. Their use of other technologies also varies considerably” (p. 1). It further reported that technology was not central to the scope of teacher education programs, and, thus, graduates were entering the field with limited technology integration experience.

While any number of reasons and plausible solutions may be posed, Pellegrino & Altman (1997) propose a solution that prevails over others—current teacher education programs should incorporate technology into their curricula as to model and encourage
effective technology integration, and recent research shows that faculty are working toward
greater technology integration by incorporating and modeling appropriate tools and practices
(Anderson & Starrett, 2001; Aust, et al., 2005; Dawson, 2006; Hall, Kiggins, & Weimer, 2005;
Kay, 2006; Matzen & Edmunds, 2007; Rakes, Fields, & Cox, 2006).

Summary of the Literature

Reviewing literature related to the adoption or implementation or diffusion of an innovation dominates the scope of this literature review. Rogers (2003) outlines organizational change and innovation diffusion considerations, challenges, and strategies, and in this context, those are associated with NCATE requirements and relevant examples of technology adoption in teacher education.

This study represents the confluence of those principles—change, innovation diffusion, NCATE standards, and technology in teacher education. It draws upon the most noteworthy factors of each principle and applies them within the context of electronic assessment systems in teacher education programs.

Significant elements of those principles from the literature, as prescribed by the literature and corresponding analyses and empirical findings, are represented in the data collection, data analysis, and findings of this study. The preceding literature review serves to reveal the common themes within the literature, and the following findings are intended to expand, relate, and emphasize those principles in the context of electronic assessment systems in teacher education programs.
CHAPTER 3

RESEARCH METHODOLOGY

Introduction

This study sought to examine the perspectives of teacher education faculty and assessment coordinators relating to the effects of electronic assessment systems on teacher education programs with a focus on adoption and implementation procedures and processes using a framework based upon Rogers’ (2003) innovation diffusion model. Meyer (2004) identifies qualitative data collection as an appropriate method for the “continuous investigation of the diffusion process…” (p. 67). To accomplish this, the study employed a qualitative, case study approach in order to adequately present respondents’ views and provide measures for comparison. The methodology is described in the following sections: Research Questions, Research Design, Interview Protocol Testing, Cases and Participants, Data Collection, Data Analysis, Trustworthiness, and Phases and Timeline.

Research Questions

RQ 1: What factors and processes do faculty and assessment coordinators perceive can facilitate or hinder the diffusion of an electronic assessment system in teacher education programs?

RQ 1a: How do faculty and coordinators perceive an electronic assessment system as a change agent in teacher education programs?

RQ 1b: How do faculty and coordinators believe that the diffusion of an electronic assessment system affects the assessment of teacher education candidates?

RQ 1c: What procedures and practices utilized demonstrate the extent of an electronic assessment system’s use in teacher education programs?
Research Design

The study participants represent teacher education faculty and assessment coordinators at three universities selected through a random sampling technique. In order to adequately address the context under examination, the study presents perspectives from both groups of individuals—faculty who are responsible for implementing electronic assessment systems and assessment coordinators who utilize the systems for data collection. Since these groups have different responsibilities related to teacher education programs, the opinions of members in each group were pertinent to the goals of this study.

A qualitative case study design was employed. Data were collected through interviews of participants at each selected research site.

Interviews were conducted with each participant, and pseudonyms were used to ensure the anonymity of the universities and participants associated with the study. The groups of participants represent those individuals most closely related to electronic assessment systems in teacher education. Each group, though, approaches such a system for different purposes, and both perspectives—those of assessment coordinators and faculty—were imperative to providing a comprehensive review of the effects such systems have in teacher education programs. Such is the purpose of the interviews—to provide insight into the pedagogical and administrative implementation perspectives.

Patton (2002) asserts that interviewing allows the researcher to “enter into the other person’s perspective” (p. 341). He proposes that researchers use interviews to discover what one is thinking, as what one is thinking cannot be observed. This study employed informal conversational and interview guide techniques as presented by Patton (2002).

Three faculty at each institution were included in the study. These faculty were selected through stratified random sampling.
Assessment coordinators in the professional education unit at each institution were also included in this study. These individuals are responsible for overseeing the collection and analysis of all assessment data collected for the institution’s teacher education programs. Each coordinator, therefore, possesses insight that is imperative to an explanatory study of the electronic assessment system utilized in the programs. Through interviewing, the researcher was able to delve into the administrative challenges and successes brought about by the electronic assessment system with which the assessment coordinators work.

The researcher suspected that these challenges and successes were likely to have an effect on the faculty perspectives. Thus, an element of data triangulation and a basis for cross-case comparisons was presented. By using responses from all participants in a single case study, the researcher presents a thick description of each case’s electronic assessment system adoption and implementation while using the data collected to compare and contrast the perspectives of faculty and assessment coordinators. This in turn lends credibility to the findings using two-fold data triangulation. These data collection measures allowed the researcher to construct cross-case comparisons of each participant to his or her most closely related counterpart in the other case studies, yielding two analysis strategies that strived to compare and contrast within-case and cross-case data.

The qualitative, case study design selected for this study was the most appropriate for the types of research and data analysis conducted. Yin (2003) notes that case study research enables a researcher to describe “how” and “why” a phenomenon exists. The design permitted the researcher to delve deeply into the essence of the phenomenon under investigation, and interviewing is one of the most appropriate data collection measures for such an investigation. Because the case study design is a research technique that “comprises an all-encompassing method—covering the logic of design, data collection techniques, and specific approaches to
data analysis” (Yin, 2003, p. 14), it presents a comprehensive research strategy (Stoecker, 1991; Yin, 2003).

Interview Protocol Testing

The interview protocol for the study was tested to evaluate the ambiguity of each item’s content and the clarity with which each item was presented. The testing involved three participants whose work within a professional education unit is shared between teaching and assessment. Through purposive sampling, the participants were selected for their representation of the two participant groups in this study—faculty and assessment coordinators. At the time of the testing, each participant had faculty responsibilities within the teacher education programs where they held academic rank, and their assessment responsibilities were reflected in their roles related to program area coordination and campus-based NCATE accreditation.

Once consent to participate was granted by each participant, interviews were scheduled, and the interviews took place in the participants’ offices. Each participant was provided with an electronic copy of the interview protocol no less than 48 hours prior to the interview. During each interview, the researcher made notations of questions and comments posed about the protocol in preparation for the forthcoming revisions. The participants’ recommendations were limited; however, through the researcher’s field notes, the recommendations they presented were addressed and incorporated into the protocol. One substantive recommendation was posed and incorporated into the protocol as suggested; other recommendations were of a semantic nature, primarily, where participants asked for clarification on ambiguous items or terms. Each suggestion was considered, discussed with the participants, and, ultimately, reflected in the interview protocol as they were found to enhance the protocol quality.
Cases and Participants

Case Selection

Universities whose teacher education programs require the use of electronic assessment systems were considered for the study. From those potential candidate universities, three universities were selected through clustered random sampling. Each university within one purposefully selected statewide higher education system was identified in one of three clusters:

- Universities using campus-based, locally-developed, non-commercial electronic tools for assessment, represented in Case 1
- Universities using a state-endorsed, commercial electronic assessment system, represented in Case 2
- Universities using an alternative, commercial electronic assessment system, represented in Case 3 (Note: These universities use the same commercial system.)

The grounds for identifying each university with the appropriate cluster were gleaned from university World Wide Web sites and fact books as well as telephone and e-mail correspondence with assessment coordinators when the necessary information was not available through public-access means.

Participant Selection

Participants were representative of the university personnel most closely associated with electronic assessment systems in teacher education programs. They constitute the individuals who implement the innovation and analyze and share the data collected. Soliciting views of each group facilitated the synthesis of electronic assessment systems’ effects on teacher education programs and their potential for future implications in those programs.

The selection of faculty participants was conducted through a stratified random sampling procedure. Three strata were identified a priori as Innovator (Level 1),
Adopter (Level 2), and Novice (Level 3). Each stratum reflects the extent to which an individual utilizes an EAS as determined by assessment support personnel at each institution. Collectively, the strata present a continuum by which faculty members’ EAS utilization was judged. The three strata classifications were provided to individuals within each Professional Education Unit who work in assessment support positions where they would be well-informed of each faculty member’s utilization of the institution’s electronic assessment system. Those individuals ranked each faculty member according to the three strata, and the rankings were provided to the researcher. These correspondences were meditated through e-mail.

Once the rankings were received, the researcher randomly selected one member from each stratum. An e-mail solicitation message (see Appendix C) was sent to each selected member. Each e-mail message was followed by a telephone call (or voicemail message) within 72 hours. Interviews were scheduled with participants who agreed to participate in the study, and second random selections from the appropriate strata were made for participants who declined to participate.

Each institution had only one designated assessment coordinator; therefore, no sampling technique beyond that of the clustered random sampling by which the cases were selected could be used to select the assessment coordinator participants.

The interview protocol (see Appendices A and B) for each participant was sent via e-mail no less than 48 hours prior to the interview.

Data Collection

Interviews constituted the study’s method of data collection. Figure 3.1 presents the data collection used in this study.
Interviews were scheduled at the 12 participants’ convenience and were held at locations of the participants’ choosing. Interviews were conducted, primarily, in the participants’ offices; however, some were conducted in conference rooms or off-campus locations suggested by the participants.

Informational conversational and interview guide techniques proposed by Patton (2002) were appropriate for the data collection in this study and were implemented accordingly. Interview protocols for each of the five participants at each site were prepared in advance; however, the researcher did not limit the interviews to the a priori protocol.
Interviewing is a data collection measure that yields targeted and insightful results. While these two strengths provide focused results and perceived causal inferences, several challenges to the interview exist. Among those challenges are bias—of the researcher and the protocol—and reflexivity, where the interviewee responds as he or she feels the researcher wants. These challenges present threats to the trustworthiness of the data results, and precautions outlined later in this chapter identify measures to address those threats.

Data Analysis

Data analysis was conducted using constant comparative analysis (Glaser & Strauss, 1967) to provide the most robust and accurate analysis of the data.

The analysis involved transcribing all interviews so that all data was available in textual format. All transcriptions were sent to participants electronically for review. This constituted the member checking element of the study, and it provided participants the opportunities to revise or elaborate upon any remarks made during the interviews.

Case Studies

The three case studies were constructed in a question-and-answer format suggested by Yin (2003). Yin (2003) posits that the question-and-answer format is often superior to other case study reporting formats when multiple cases are reported within a single report. Patton (2002) identifies the concept of a thick description, where as much detail as possible is presented in order to portray participants’ responses most accurately. The case study reports combine Yin’s (2003) format with Patton’s (2002) reporting technique.

Within each case study, each protocol item is identified, and the thick descriptions follow each item. Each thick description represents a synthesis of the four participants’ responses to the one item identified. While the responses within the synthesis are credited to the
participants who provided them (see Table 4.1), the thick descriptions do not delineate among participants. All four responses for each item are presented as one aggregated response.

Cross-Case Analysis

Using the constant comparative method once the member checks were completed, the transcripts were analyzed to identify emergent cross-case themes. During the transcript analysis, handwritten notations were made to identify potential, emergent themes within the transcript. Each potential theme was given a unique code, and all coded themes from each transcript were entered into an electronic spreadsheet. The potential aggregated themes were analyzed, and through constant comparison using sorting and filtering tools within the electronic spreadsheet and manual coding when necessary, those were narrowed to the dominant themes presented in Chapter 5. In order to ascertain consistencies across each case, a cross-case analysis was conducted per the themes identified within each case.

Once the final themes were identified, the researcher electronically color-coded the blocks of text within each transcript that contributed to the themes, and each block of text was mutually exclusive, meaning that no single block of text (i.e., data) contributed to more than one theme. Color-coding the text permitted the researcher to identify efficiently the participant to whom a quotation was attributed. The color-coded text segments were then moved from location to location within the document in an effort to “cluster” all data by theme. From there, the researcher constructed the cross-case analysis narrative.

The rationale for conducting the proposed emergent theme analysis was to ensure that the research findings reflected the data collected accurately without researcher influence. Thus, no a priori themes were identified to lend additional credibility and accuracy to the emergent themes to be identified in the research findings, and the findings are reported by theme in Chapter 5.
Trustworthiness

Trustworthiness provides validity and credibility to qualitative research methods. Yin (2003) promotes the use of multiple sources of evidence, and he identifies that using multiple sources enables a researcher’s conclusions to be more accurate.

In quantitative research, researchers provide for valid and credible data by conducting appropriate statistical analyses on data collection instruments to account for and address ambiguity, bias, and other factors that have the potential to skew data results. In qualitative research, however, data collection instrument validation is not prevalent. In fact, qualitative research does not require that data be collected via an instrument. Since most qualitative data is collected through observations, interviews, and artifact analyses, researcher bias and data accuracy or validity present threats to the data. Trustworthiness is introduced in qualitative data to address that threat.

A number of techniques are available to qualitative researchers working toward ensuring the trustworthiness of qualitative data results (Creswell & Miller, 2000; Patton, 2002; Tashakkori & Teddlie, 1998). Three methods employed in this study were member checking, peer debriefing, and triangulation.

Member checking is a process through which participants review the data collected and conclusions drawn to examine the accuracy of the researcher’s work. Participants in the research are information-rich, or at least more information-rich than is the researcher; therefore, those individuals represent the most appropriate individuals to solicit in member checking. They are “members” of the context under examination, and they are informed on the focus of the research. They can be invaluable resources in attesting to the validity, accuracy, and credibility of the data collected and the analysis that follows (Tashakkori & Teddlie, 1998). In
this study, participants were asked to review electronically transmitted transcripts of their interviews to ensure response accuracy.

All transcripts of participant interviews were sent via e-mail to the participants, and participants were asked to review their responses and submit any revisions or elaborations to the researcher. Once participants completed their reviews, they contacted the research via e-mail with revisions, elaborations, or confirmations of the transcripts.

Creswell & Miller (2000) discuss the peer debriefing validation strategy. Peer debriefing is a process by which an individual external to the study reviews and evaluates the researcher’s findings to eliminate inaccuracies and bias. In this study, the researcher provided a research associate, who was experienced with qualitative research in both the humanities and social sciences disciplines and the study at hand but not involved directly with it, with transcripts of participant interviews and a draft of the data results. The peer debriefer used these artifacts to evaluate the researcher’s findings and presented verifications and questions of the researcher’s data interpretation. The researcher reevaluated and revised the findings based upon the peer debriefer’s comments, while comparing those comments to the participants’ interview transcripts in order to account for and eliminate peer debriefer bias.

A final method of data validation in this study was triangulation. Patton (2002) presents triangulation as a method of validating data results from one source with correlates or contrasts in the results of other sources. While triangulation is most often associated with comparing multiple types of data, this study utilized triangulation of the same type of data from multiple sources. The researcher employed within-case analyses, meaning that the interviews of one case study’s participants were compared to identify common themes or contrasts present within the case, and that comparison presented an element of triangulation.
Phases and Timeline

Table 3.1 delineates the major phases of this research study and the timeline of when those phases were executed.

<table>
<thead>
<tr>
<th>Phase</th>
<th>Timeline</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>February 2007</td>
<td>Study proposal and interview protocol presented and approved</td>
</tr>
<tr>
<td>2</td>
<td>February 2007</td>
<td>Institutional Review Board (IRB) approval of study received</td>
</tr>
<tr>
<td>3</td>
<td>March 2007</td>
<td>Interview protocol tested and revised</td>
</tr>
<tr>
<td>4</td>
<td>March 2007</td>
<td>Cases and participants selected</td>
</tr>
<tr>
<td>5</td>
<td>March 2007</td>
<td>Interviews scheduled</td>
</tr>
<tr>
<td>6</td>
<td>April-May 2007</td>
<td>Interviews conducted</td>
</tr>
<tr>
<td>7</td>
<td>April-May 2007</td>
<td>Interview transcripts prepared and remitted to participants</td>
</tr>
<tr>
<td>8</td>
<td>April-May 2007</td>
<td>Member checking completed</td>
</tr>
<tr>
<td>9</td>
<td>June-July 2007</td>
<td>Data analysis conducted</td>
</tr>
<tr>
<td>10</td>
<td>July-August 2007</td>
<td>Findings interpreted and conclusions prepared</td>
</tr>
</tbody>
</table>
CHAPTER 4  
PRESENTATION OF INDIVIDUAL CASES  

Introduction  

The three individual cases included in this study are presented in this chapter. Each case study portrays one higher education institution. Yin (2003) suggests that the question-and-answer format is advantageous when presenting multiple cases within one report; thus, these three case studies are presented in question-and-answer format per the appropriate items from the interview protocols for both groups of participants (see Appendices A and B).  

Responses of all four participants within each case study are presented for each item in an effort to provide accurate and thick descriptions. Instances during interviews where participants repeated words, paused to formulate responses, or recanted or revised comments were omitted from all direct quotations. No omissions, however, compromise the substance or integrity of the participants’ responses. The context within which each response was given and the depth and breadth of the responses are represented accurately.  

In reporting these case studies, the researcher identifies each participant with a code that indicates the case and participant. These codes are used in lieu of the participants’ actual names or pseudonyms.  

Table 4.1  Participant Codes  

<table>
<thead>
<tr>
<th></th>
<th>Case 1</th>
<th>Case 2</th>
<th>Case 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment Coordinator</td>
<td>C1AC</td>
<td>C2AC</td>
<td>C3AC</td>
</tr>
<tr>
<td>Faculty 1</td>
<td>C1F1</td>
<td>C2F1</td>
<td>C3F1</td>
</tr>
<tr>
<td>Faculty 2</td>
<td>C1F2</td>
<td>C2F2</td>
<td>C3F2</td>
</tr>
<tr>
<td>Faculty 3</td>
<td>C1F3</td>
<td>C2F3</td>
<td>C3F3</td>
</tr>
</tbody>
</table>

To maintain the anonymity of the institutions and participants within each case, identifying details about each are limited. Participant anonymity was guaranteed in the request
to participate (see Appendix C) that was sent to each randomly selected potential participant. That commitment was reaffirmed to participants who expressed concern about the confidentiality of their identities. To ensure this anonymity, the codes presented in Table 4.1 are used for all participants and cases.

Case 1

Context

Case 1 presents the context of a university in the southern United States that holds institutional accreditation by the Southern Association of College and Schools (SACS) and NCATE accreditation for all teacher preparation programs.

According to the university’s Fact Book, the college within which all teacher preparation programs are housed had an enrollment of over 1,800 (nearly two-thirds being undergraduate and one-third, graduate) in the 2005-2006 academic year. That enrollment accounted for almost 22 percent of the university’s total enrollment. During that academic year, a total of 320 teacher education degrees were conferred. Baccalaureate and graduate degrees accounted for nearly 60 percent and 40 percent, respectively, of those conferred. The degrees conferred represented a broad spectrum of teacher education programs including early childhood education, educational leadership, educational technology, elementary education, health and human performance education, secondary education, and special education to name a few.

As of the fall 2006 term, according to the most current version of the university catalog, faculty within the college, including those whose responsibilities are outside teacher education programs, totaled 42. Of those full-time faculty members, 9 held the rank of professor; 6, the rank of associate professor; 23, the rank of assistant professor; 3, the rank of instructor; and one faculty member held lecturer rank.
The electronic assessment system (EAS) utilized at the Case 1 university is a locally-developed system that combines various technology productivity applications together to address the assessment needs of the Unit. In spring 2007, the university migrated from a commercial system that had been in use since 2003 to the current system. In the current system, candidates have the capabilities to create electronic portfolios developed with Web page editing software and to record field experience data electronically. Faculty can create electronic instruments for course-based data collection if they choose. For Unit assessment, a number of evaluation instruments and surveys are available in electronic format that are used to collect NCATE- and SACS-required candidate data.

Positive Effects and Advantages

Responses to positive effects and advantages are to the protocol item: Discuss the positive effects and advantages that you believe a university’s electronic assessment system (EAS) can have on teacher education programs.

Assessment coordinator

A number of positive effects were identified during C1AC’s interview. Among those were that the presence of an electronic assessment system (EAS) is attractive to accrediting agencies. C1AC notes that EASs are “hot topics” and that “having an electronic assessment in your college looks great to NCATE, looks great to SACS.” Regardless of its appearance, a practical advantage of timeliness was noted. C1AC states that an EAS “helps in getting data in a timely fashion,” and the speed and ease with which data can be gathered effects programs positively simply due to the efficiency of the data collection. “To have, you know, a hundred surveys entered within an electronic system and having the data spit out directly into an Excel spreadsheet,” C1AC states, “is a lot easier than sitting down and hand-tallying it, so I think it
helps with getting things done in a timely fashion.” With the efficiency, C1AC surmises, comes greater organization.

I think the less paper you have, the more organized you’re going to be, and I think if we can have reports posted on a Web site, saved on a disk, in a backup system, that’s a lot more effective than having a filing cabinet full of old data that we have to pull paper by paper.

Faculty

C1F1 agrees that one of the “positive effects of an assessment system is that you can organize information and in a timely fashion” and identifies the collection of field experience data as a significant advantage that yields positive effects.

It [the EAS] gives you an organized way and an efficient way to input data into a database where you can keep track of a lot of information that could get to be really disorganized if you didn’t have a system to input that into.

Because the data are maintained electronically, the data are available “at the touch of a button” and can be printed for manual filing if needed. Beyond organization, the EAS “gives you a snapshot of what you’re doing and where you’re going.” C1F1 concludes that electronic portfolios, sometimes, are reflections of this, and within those portfolios may be where the data sources lie.

According to C1F1, “you can put an electronic portfolio online that shows you the progression of your work, and it is a showcase of your best work you can also see growth and reflection in it.” The idea of the portfolio serving as a component of the professional employment application process was also presented during the discussion.

C1F1 suggests that data collection tools allow for important decision-making on candidates. Evaluations and surveys can be used at multiple points within a program, and instances like those where “the assessment tool is really invaluable.” One example of using
these data is to make educational decisions or recommendations on students’ candidacy, using data “to mark where their strengths and weaknesses are.” C1F1 continues:

assessment, I don’t know how you live without [it]. I mean, I don’t know how you efficiently run an organization or an institute where you [are] in higher learning or any type of learning, and you’re helping people to track careers and helping them with academics, and you’re trying to mesh all of this together.

For C1F1, assessment “shows the weaknesses and strengths of a program, of a class, of a set of students.” As a faculty member, it shows “the whole cyclical process of teaching where I have objectives and goals. Without assessment, it’s impossible.”

Essentially, “a university’s electronic assessment system, I think, is the face of the university.” C1F1 compares the EAS to a bank teller in that the “teller is the face of the business,” and the:

first impression of that organization is the teller. To some degree, the face of the university is the electronic assessment system because it pulls all the data together, and it makes a statement about how efficient you are, how well-run you are, and [that you] just have your act together.

C1F2 acknowledges that the EAS “should serve as a repository of the critical artifacts that we have determined are needed for classes.” In addition to artifacts, it should be a repository “for field experiences and the data associated with that.” The positive effect of having this repository is that “it will enable us to satisfy our accrediting agency groups.” It also provides coherence and uniformity. “It brings us together in a coherent manner, so everybody’s not just collecting your own data in your own way. It’s uniform. It’s standardized.” C1F2 provides a class example:

As a teacher, I like it because if I give an assignment, very often if I give it to 30 students, I get 30 different results. This way, they go, they fill out the same form, so, you know, I like that because they will mess that up otherwise. You know, you give them an open-ended assignment, and well, oh, Lord.
In the state, C1F3 describes, “we’re supposedly pulling together to accomplish what needs to be done for our future teachers in the state, [and] we need to make some of what [will be] components of their jobs” components of their preparation. A positive effect of this would be to ensure that “the university’s electronic assessment system is compatible with others in the state” so that teacher preparation skills across universities are equivalent. Regardless, “we had to make a change, and I think it’s going to be a positive change.”

C1F3 summarizes that the “advantages of using a system are the ease of data collection and the collection for all the information that can be gathered and disseminated in various areas, categories, whatever is needed to track our success.”

Negative Effects and Challenges

Responses to negative effects and challenges are to the protocol item: Discuss the negative effects and challenges that you believe a university’s electronic assessment system (EAS) can have on teacher education programs.

Assessment coordinator

C1AC feels that while the technology of an EAS provides for greater efficiency and organization, the feasibility and practicality of the EAS are considerations. C1AC thinks that “sometimes attention is focused on the logistics of this big, monster electronic system,” and “there’s too many bells and whistles” to really make full use of the system. C1AC notes that the adoption of such a system requires change, and the less feasible or the less practical, the less likely that buy-in will be garnered. As this individual notes, the nature of higher education faculty, thus, becomes a consideration.

You know, the nature of college faculty, let’s be honest, the nature of college faculties are for the most part, I’m kind of generalizing here because there are obviously exceptions, but they’re kind of laid back individuals. Many of them are set in their ways. It’s not a profession that people get out of early. They usually tend to stay for a long time, so you’re dealing with individuals who, that as effective as they may be, are
set in their ways and to grab an individual and say, “Hey, it’s 2007. Enough of doing paper and pencil gradebooks. We’re going to this new system.” They don’t want to do it.

C1AC continues to discuss the challenge of accountability. “Often times,” it was noted, “your upper administration are the people who hold these people accountable.” For this assessment coordinator, the prevailing issue with buy-in relating to reticent faculty is the likelihood of administrators holding them accountable for meeting the prescribed EAS utilization expectations of faculty while being tempered with technology challenges. C1AC continued:

I think what you end up with are, you know, a few superstars within the department who are normally your young or inexperienced or trying to make a name for themselves or trying to get tenure are on board to do it, and then the older ones drag it down. Um, so, I think that’s a big challenge of getting them to buy-in to something.

Faculty

C1F1 agrees that the EAS may also present challenges, but “you’ve just got to run it, and if it has glitches, it can be frustrating. It can go down on you. I mean, the whole system can crash or be offline, and it’s frustrating.”

Training concerns C1F2. “I think the biggest challenge is teaching everyone how to use it.” For C1F2, the result of usage complexity could be negative, but it is “hopefully easy to use,” which will help to yield positive results.

C1F3 speaks of the challenge of continuity. “Our challenge,” C1F3 says, is “that we had another system, and now we have this one. There’s a lack of continuity there,” and the lack of unity among data collection methods is a challenge for this faculty member. “If every university has a different system, and we’re all just doing our own thing; we’re not unified, we’re not able to compare; we’re not able to share.” The lack of unity in EASs “puts us [the
state’s universities] in a competitive situation with each other.” Beyond data collection, C1F3 feels that access and training are two prevalent challenges.

Features, Elements, and Tools

Responses to features, elements, and tools are to the protocol item: Describe the features or elements (e.g., evaluation instruments, survey tools, demographic data options, etc.) of an EAS that you feel are most valuable.

Assessment coordinator

C1AC posits that data collection tools are the most valuable. C1AC identifies the data collection tools that allow one to “sort and filter, break up [data] by program” are valuable. For C1AC, the ability to “compare programs within the college” is important. An example comparing baccalaureate programs to alternative certification programs was provided:

You know, one thing we have is our alternative certification programs. I think it’s very important for us to be able to look at those students’ performances compared to our regular teacher ed. performances. I think that type of tool within the system that will allow us, again, in a more timely fashion break down that data and separate it amongst programs or groups or cohorts, whatever the case may be is extremely important.

The capabilities of this EAS to gather field experience and candidate demographic data emerged during the discussion where the two programs were compared, and “the ability to breakdown this data in multiple ways, I think, [is one] of the key factors that a system can provide.”

Faculty

C1F1 believes that all tools within an EAS “have their own strengths in their own right.” The conversation reveals that evaluation instruments, survey tools, demographic data, and electronic portfolios are the most significant. C1F1 notes that evaluation instruments serve as gauges that tell “where we are, where are our strengths, where are our weaknesses so that we are constantly in a progressive mode where we’re improving. We’re being innovative and
progressive, and because of evaluation instruments, we know where we need to improve.”

C1F2’s comments concur in regard to data collection, especially in collecting field experience data.

   One of C1F3’s “top features” is “the ability to put the portfolio together in a common sense, easy-to-use form.” The portfolio “is the major focus. As an educator in teacher preparation, I’m thinking the portfolio is the most important.”

Electronic Assessment Systems and NCATE

Responses to electronic assessment systems and NCATE are to the protocol item:

*Discuss your overall impression of an EAS and its effect on the NCATE accreditation process.*

Assessment coordinator

Referring to commercial EASs, C1AC remarks that “on the surface, it looks good to be honest with you,” but:

   I don’t even know that I feel that as much anymore after going to some conferences and seeing some actual NCATE presenters that are long-term BOE members that literally just sit there and say, you know, “We use Access.” or “We use Excel.” So, is it a trend? Maybe.

Simply being able to demonstrate “that you’re not just doing this paper-pencil tabulating is beneficial.” The absence of an electronic system “bogs it [the assessment process] down with all the paper. It just confuses the process.” C1AC discusses how the technology facilitates the assessment process, but that technology does not necessarily have to be a commercial EAS because, as C1AC notes, “the downside [to] these programs is [that] they become too complex.” Continuing, C1AC notes that complex EASs lead to “trying to assess everything trying to take data and spin it in a million different ways.” C1AC refers to a conversation with a BOE member who explains that he or she “would rather see a university have a smaller amount of data, yet they’re doing something with it, rather than having this monster system where
they’re assessing everything that moves, but it’s going nowhere. It’s just sitting on a desk somewhere.” C1AC poses the suggestion to “be realistic, and look at making it [the EAS and its utilization] feasible for your population, for your needs, for the college, for the different programs, and for NCATE.”

Faculty

Without an “efficient system” for documentation, C1F1 notes, “we’re out to dry.” NCATE requires that “we verify that what we do is valid, that what we’re doing is working, and that we’re addressing that issue. We have to document growth. We have to show that we are worthy of being accredited.” C1F1 sees that an EAS allows for the collection of data necessary to demonstrate that individuals are held accountable and that institutions are “worth being in existence.”

C1F2 is “aware that they [NCATE] have requirements in terms of reporting and we have to provide the data. To me, this is the only way to do that.”

According to C1F3, “we gotta have it. The better it is, the better we are.” What C1F3 believes is “probably commendable by NCATE” is “the creation of the electronic portfolio where we’re tracking our teacher education candidates through their time at the university.” C1F3 expresses the belief that the technology allows multiple data to be compared, and “my impression [is that] it’s essential to our accreditation.”

Forces of Change and Change Agents

Responses to forces of change and change agents are to the protocol item: Do you view an EAS as a force of change or a change agent? Discuss your response.

Assessment coordinator

“It changes a lot of what you do,” C1AC admits. C1AC continues, “I think it is a change agent, and I think that because it becomes a challenge because of the issue with the
faculty, and it can’t work on its own.” While discussing how it promotes change, C1AC notes that the lack of acceptance to the change contradicts the assessment process because an EAS will “do everything you want it to do. It works wonderful, but then the data, there’s nothing in it,” and “there’s nothing in it because the people who were responsible for putting that information in there didn’t buy into it.” Noting the culture of college faculty, C1AC posits that “change is not always a very welcomed thing. We get set in our ways.” To address this, it is necessary to “force the change on them [those who are reticent to it]” but not to “do it all at once.” C1AC stipulates that it should be simplified and paced appropriately for maximum buy-in.

I think it can be very effective, but that’s a point that one of the biggest challenges is [that] it is a change agent. It forces change on campus with the idea of it being a good think. I think, unfortunately, at times it does force change on everyone, and the nature of college campuses is that change doesn’t occur, it just becomes stagnant, and that’s a fear that I have over some of these things.

Faculty

C1F1 adamantly proclaims, “Absolutely. It helps to identify areas in which change is needed. It’s kind of ironic that it’s a force of change, and, yet, one of the greatest resistsants to the system is a resistance to change.” Nevertheless, it is “absolutely a force for change and necessary change, and there is no way in the world we can say we’re progressive [and that] we are changing unless we [have] a change agent, and the change agent is the assessment system.”

C1F2 thinks that an EAS is a force of change “because we all stop and look at what we’re doing.” Regardless of the system, “as long as we keep reflecting back on what we’re doing and trying to improve and trying to change, I think it’s a good thing.”

C1F3 notes that an EAS is a force of change in that it forces change to occur. For being a change agent, “you could argue that, too, because certainly using the assessment tool is going
to change what’s being done, but I think mostly [it is] the force.” The technology promotes change because it “expands, enhances, [and] advances.”

**Instructional Roles**

Responses to instructional roles—by faculty only—are to the protocol item: *Discuss the role an EAS can play in a faculty member’s work and how it can be used to enhance his or her work.*

Well, I would go back to being a better advisor because I’ve got the information I need, so I can make a better educated, informed decision, and I can discuss issues with a student because I’ve got all the data and all their work right at my fingertips.

Having ready access to all student data is “extremely important,” according to C1F1, to provide direction to students. It “helps me as far as knowing where a student’s been and where they’re going.” The EAS also provides tools for assessment “in the form of rubrics that is also a great help.”

C1F2 believes that the EAS:

> takes the place of us having to hold all these documents. I see it as a repository for that. As a faculty person, I don’t want a bunch of papers around me to shuffle around, and I like that feature. I see it as another tool in our [faculty’s] toolbox.

C1F2 also uses it to collect course-based field experience data and sees “major benefits to the college of education as a result of that [having electronic data collection tools] in terms of research and reporting.”

> “It can of course be required in our classes to use the system for assignments to be graded with rubrics,” C1F3 discusses. Beyond that, it can be used for “assessment in our classes as well as tracking and gaining data.”
Assessment Opportunities

The response to assessment opportunities—by the assessment coordinator only—is to the protocol item: *Discuss what you believe a university’s EAS allows an assessment coordinator to do what would not have been possible otherwise.*

“It saves a lot of time” for C1AC because the electronic facet of the EAS allows for efficiency, and the time savings also reflect the greater organization that it facilitates for this assessment coordinator’s work. It is systematic—“system, and that’s what we’re working on here to get that to where it needs to be. It gives you the opportunity to systematize what you’re doing and works as a tool to help you do that.” C1AC continues by noting that the data is “backed up.” It is secure. All these factors, C1AC believes, facilitate the appropriate use of the data. The EAS permits an assessment coordinator “to get the data just the way they [stakeholders] need it to make decisions.” It allows those involved to “close the loop” and “take [the] data and make some changes or adjustments.”

Decision-Making Contributions

The response to decision-making contributions—by the assessment coordinator only—is to the protocol item: *Describe how you believe an EAS contributes to decision-making (candidate, program, unit, etc.).*

“I don’t necessarily believe that an electronic system contributes to what decisions are actually made. I think it just enhances the process. It expedites the process.” C1AC takes some time to reflect on decisions made before the presence of an EAS and notes that decisions were made in the absence of an EAS. To qualify those remarks, C1AC states that:

you know, it comes down to having a lot of stuff on the front-end and what comes out the back is just literally an Excel report, which could have been done a long time ago, and that’s essentially the data, whether it’s quantitative or qualitative, that data, those words, those numbers, is what that individual, that committee chair, that department chair, has to sit down and use to make a decision.
To conclude, it was added that “yes, the electronic assessment system assists in [decision-making]. Speeds it up. I don’t know how it contributes directly to the decision per say.” For C1AC, it is a tool used to provide data for decision-making, but it is not a decision-making tool.

Case Summary

The context of Case 1 is unique. It is unique because it is the only case of the three that involves a locally-developed EAS. The others involve commercial EASs. Case 1’s participants speak from a perspective where the EAS is being augmented to suit their needs. Thus, these responses reflect not only what the participants believe about an EAS and what it can or cannot do, but also the responses reflect what this institution’s EAS is or will do because faculty have a significant “voice” in how the EAS is used and the tools available within it as its uses and tools are being defined and built as the assessment process progresses.

For the Case 1 participants, the consistent advantage of the EAS is efficient data collection, and one positive effect they note that it provides is the efficient use of the data. They believe that the technological methods by which data are collected permit a brief turn-around with data analysis and dissemination. Interestingly, the technology is also a challenge because, as they discuss, not all individuals involved are technology-savvy, and the technology used has recently changed.

Despite its challenges, however, the consensus of the participants seems to be that the EAS enhances what is done within the teacher education programs. Whether those enhancements be in the form of candidate-constructed electronic portfolios that demonstrate skills or evaluation instruments used to collect candidate data, the EAS seems to have been a force of change. That change seems to have been positive in most respects, and the participants seem to feel as though it has added value to their courses and assessment practices, which they
feel will be a positive enhancement for NCATE accreditation. As one participant notes, however, NCATE does not endorse or require any particular commercial EAS, so these participants seem justified in their perceptions of how a locally-developed EAS will allow them to satisfy all assessment data expectations, be it for instructor-level use or NCATE accreditation.

Case 2

Context

Case 2 presents the context of a university in the southern United States that holds institutional accreditation by the Southern Association of College and Schools (SACS) and NCATE accreditation for all teacher preparation programs.

According to the university’s Fact Book, the college within which all teacher preparation programs are housed had an enrollment of over 1,200 in the 2005-2006 academic year. During that academic year, over 200 teacher education degrees at the undergraduate and graduate levels were conferred, representing 13.65 percent of the total degrees awarded by the university. The degrees conferred represented a broad spectrum of teacher education programs including early childhood education, educational leadership, educational technology, elementary education, health and human performance education, secondary education, and special education to name a few.

As of the fall 2006 term, which is the term in which the most current Fact Book was published, faculty within the college totaled 22. Of those full-time faculty members, three held the rank of professor; six, the rank of associate professor; ten, the rank of assistant professor; and one at the rank of instructor; two were unaccounted. Nine of the 22 faculty were tenured.

The EAS utilized by the university in Case 2 is a commercial, state-endorsed system that has been in use since 2003. For the most part, faculty develop course-based requirements
for EAS utilization in their courses. At the Unit level, candidates satisfy particular program requirements through the creation of electronic portfolios. Beyond the portfolio, candidates are required to use the EAS to record field experience data and complete surveys electronically.

Positive Effects and Advantages

Responses to positive effects and advantages are to the protocol item: Discuss the positive effects and advantages that you believe a university’s electronic assessment system (EAS) can have on teacher education programs.

Assessment coordinator

“I believe that one of the most positive effects we have had, looking back on it now is being able to cluster program completers.” C2AC provides examples of secondary mathematics and PK-3 education students where data gathered may be disaggregated by program, allowing for “very deliberate changes by program.” “Being able to track individuals” in order to “give them [candidates] our endorsement that they’ve had experiences” required by and relevant to their certification areas. “We could give physical evidence that they have seen every grade level within that band of certification.” The conversation revealed that the EAS allows for the gathering of concrete data for decision-making and program review.

It’s not a qualitative kind of thing where we think we’re doing a good job; we can track to make sure that they [candidates] have had exposure and experiences to the full breadth of their certification bands. That’s one of the most positive effects.

“I really think one of the advantages is providing a framework.” C2AC discusses the tendency or trend in education for individuals to make decisions based on informal discussions.

Well, the electronic assessment system has given us a framework to make more systematic changes because higher education, just like P-12 schools, has some turnover, and so this [the EAS] allows us to have some history without just relying on the person who’s been there the longest.
Faculty

C2F1 describes that “we have utilized our electronic assessment system greatly to make decisions about our teacher education programs.” One example of this involves using “the data on field-based observations and field-based experiences in terms of helping us determine candidacy requirements.” C1AC and C2F1 both discuss an EAS’s advantage regarding field experience data. C1F1 describes that having field experience data electronically allows for efficient analysis of the data, and “that’s enabling us to make placements for them [the candidates] for clinical practice and for student teaching.” A positive effect is also the opportunity for students to create “electronic portfolios to help us document student teacher performance and their [the student teachers’] achievement during their student teaching” term. C2F3 agrees that “for our students, being able to use electronic portfolios in their assessment system allows them to really show the work.” In many cases, “I think our electronic assessment system and our electronic portfolios allow for a much more real interpretation” of candidate performance.

In addition to field experience and portfolio data, C2F1 describes, “we use the electronic assessment system to help us gather data on candidate dispositions.” This is done through “designated courses throughout their curriculum in which instructors as well as cooperating teachers give us information on dispositions.” Thus, “I think it [the EAS] has had a lot of positive effects.”

C2F1 describes how these effects were personified during the last NCATE visit when BOE members asked for examples of data disaggregated by candidate and program, and “I felt like it gave a lot of advantages in a way to provide data.” It also allowed us “to present the team [BOE members] the number of field experience hours that our candidates had clocked, so it provides a lot of valuable information.”
According to C2F2, the advantages of an EAS are “that the data collection system is much more efficient and effective and accurate than not.” C2F2 notes the potential for error because most data input requires human intervention, but the processing of that data is completely automated and efficient. In addition to efficiency, effectiveness, and accuracy, C2F2 identifies that the EAS provides data security because it is “a more efficient, locked storage.”

Emerging from the discussion was another advantage that yields positive effects—the EAS support. C2F2 notes that “it has been an advantage to have really good tech support.” C2F2 identifies the campus-based technology support person as “Johnny on the spot” when issues arise from students, faculty, or administrators.

Diversity in field experiences is important for Case 2 participants, and C2F2 identifies that the EAS benefits field experience placements and diversity tracking. “It helps in decision-making because you can tell not only how many field experiences [a candidate has completed] but where they were, and then you’re able to determine the diversity of the placement.”

For C2F3, the positive effects and advantages relate to timeliness. C2F3 believes that “you have to have some sort of assessment, so an electronic assessment system should be, I think, more comprehensive, much more timely. It allows for data collection and data interpretation to be much more precise and more timely.” After struggling for some time, “I think we’re finally at a point where it [the EAS] seems to be pretty effective.”

Negative Effects and Challenges

Responses to negative effects and challenges are to the protocol item: Discuss the negative effects and challenges that you believe a university’s electronic assessment system (EAS) can have on teacher education programs.
Assessment coordinator

C2AC identifies that one negative effect is the potential for one person to overlook qualitative factors that may be valued by the stakeholders, and C2AC continues to describe that if only one person (e.g., the assessment coordinator) reviews data, he or she is likely to concentrate on the type of data with which he or she is most comfortable. “I’m incredibly analytical [preferring quantitative data], and I know that about myself,” C2AC notes. C2AC continues to discuss a preference for quantitative data. “I can overlook some qualitative factors in just looking at the data, so it’s very important that others look at the data and make their own decisions rather than one just analyzing and sharing with [them].”

One challenge sometimes faced, according to C2AC, is “agreeing on the indicators to be assessed.” This often presents “a point of negotiation or a series of negotiations,” and “a real challenge is deciding on that [the assessment indicators] in advance and taking away that teacher flexibility.” An example of this challenge is presented by C2AC:

Let’s say for example, if we determine that we’re going to put an assessment in a particular course, we’ve eliminated that flexibility from the instructor to make their own assessment for that course. Now, certainly, we want them to do their own things as well, but, um, there are several courses that we’ve mandated have a signature assessment that would be in every section of each course for assessment purposes.

Faculty

“Certainly technology always presents a challenge,” C2F1 believes, “and there have been some challenges in trying to monitor how we use the assessment system.” One somewhat unwieldy challenge for C2F1 is maintaining accurate cooperating teacher data within the system. C2F1 notes that while challenges may exist, “I don’t feel like there are many major negative effects in how it’s served us. I think it’s served us well.”

C2F2 denotes a prevalent disadvantage is “that when it doesn’t work, it’s a bad thing.” Another disadvantage that could have had lasting negative effects “is that when we first started,
there were issues, wrinkles, that had to be ironed out.” We “also had a significant amount of training with faculty and with students, and it’s like anything else, you can train somebody for something, but if they don’t use it right then, then the training was for naught.” Consequently, re-training was an issue because “if you got trained and didn’t use it, you really had to be re-trained when it got time to use it because you’d forgotten how to do all that.”

Overcoming personality factors is another challenge C2F2 identifies. “The kids that had a lot of trouble using it didn’t have good feelings about it. They weren’t happy with having to use it.” C2F2 notes that “it wasn’t the use of technology because the kids were pretty savvy on technology use, it was the use of the electronic assessment system.” Most of the resistance in question was from upperclassmen. C2F2 found that freshmen and sophomore students expressed less resistance, and “I think it’s because they started using this electronic assessment system in their first courses because we’ve used it long enough that they had never done it another way.”

C2F2’s remarks highlight that such was not the case with upperclassmen who were confronted with the EAS within their last one or two years in teacher education programs and had been accustomed to the former methods of data collection and evaluation. C2F2 described that the upperclassmen experienced frustration with and anxiety toward the EAS.

C2F3 finds one challenge is that:

you’ll have the basic run of people trying to figure out how to use it and the learning curve that occurs in putting information into an electronic assessment system. For some people, that curve is a lot steeper than for others.

You also have the “challenge of…putting it all together in a seamless fashion that makes sense.” Another challenge is implementing utilization requirements because “unless it’s absolutely mandatory that you can’t pass the course or you can’t get out of college or whatever without using it, you might have a low percentage of return.” If utilization is permissive, “the
[data] results can often be skewed.” C2F3 feels that the greatest challenges for students are probably “time management and being able to submit it [work] in a timely manner” and “the learning curve in teaching them how to use it.”

**Features, Elements, and Tools**

Responses to features, elements, and tools are to the protocol item: *Describe the features or elements (e.g., evaluation instruments, survey tools, demographic data options, etc.) of an EAS that you feel are most valuable.*

**Assessment coordinator**

C2AC does not delineate among tools, elements, or features but stresses the value of data collection mechanisms. In response to identifying valued features, C2AC notes that “in trying to make a budget decision, I might tell you something about SCH [Student Credit Hours] production” or “the retention rate of students at different points in our program.” As an assessment coordinator, C2AC believes:

that the impetus for an accreditation body requiring us to have a data collection system is going to serve us very well—not just from an accreditation standpoint but in terms of decision-making. I think the value of a question being raised and we now have a mechanism where we can look at data in different and new ways is very valuable.

**Faculty**

“I think the demographic data is important. I think that that is allowing our teacher education program to take a look at where our learners are going,” C2F1 notes. Beyond demographic data about candidates and physical field placements, “I think it also lets us take a look at the idea of whether or not our candidates are seeing enough in terms of special needs students and the kinds of things that they need.”

C2F1 continues to discuss how evaluation instruments are used to assess dispositions. “Through our program, we have designated courses where faculty evaluate candidate
dispositions. They have to do it [the evaluation] prior to candidacy and again in certain courses after they’re admitted.”

Electronic portfolios are also beneficial tools, C2F1 presents. Some portfolios tend “to be a little more compartmentalized, but I would prefer a portfolio that would be able to reflect everything all the way across.” That would allow one “to go back and look at what a candidate [did] as a freshman and compare that to something they’ve done during student teaching.”

For C2F2, the “data collection itself and the ability to aggregate and disaggregate” is valuable. “I guess the demographics and the aggregation of data are probably the most valuable.” C2F2’s comments identify that the use of the EAS is really limited to the undergraduate programs, though. Within Case 2, though, the faculty “have not really kicked in using [the EAS] in the graduate studies. We’ve talked about it, but we just have not done that yet.”

As C2F3 perceives, “I think the most valuable [feature] is the work itself or the explanation of the work itself that the students have done.” For evaluations, “I think that all evaluation instruments of any type are important while we do them for the college of ed., we do them for the university.” Other than evaluation tools, demographic data options are identified as being important. “I think it’s something that adds value and helps me to know my students better and to know where they might have problems.”

Electronic Assessment Systems and NCATE

Responses to electronic assessment systems and NCATE are to the protocol item: 

*Discuss your overall impression of an EAS and its effect on the NCATE accreditation process.*

**Assessment coordinator**

C2AC states, “Well, NCATE accreditation is not possible without a data collection system of some sort. The standards require it. Period.” C2AC describes how the EAS has
forced reflection and analysis of practices and that “it’s made us a little more reflective in our
decisions because we have to back it [the decision] up.” The EAS presents this assessment
coordinator with the opportunity to “see if the data supports” decisions, and “it is not an
optional component of NCATE accreditation.”

Faculty

Efficiency is a significant factor for C2F1. “I think it in terms of the teacher education
program to be able to pull the data in an efficient way” is beneficial and what is needed for
NCATE. It provides “data not only for field experience but also” for “things like diversity.” In
addition to the data, “the ease with which it can provide the data is important, and I think that
the data itself when it comes down to the accreditation process is mightily important.”

“Oh, God, it made it a thousand times easier. It made everything better. I mean, it made
everything easier,” C2F2 describes. C2F2 continues to discuss various ways in which the EAS
provided “an opportunity to disaggregate [the data] in lots and lots of ways, and I think that the
people who were here as committee [BOE] members appreciated the things that the assessment
system could do.”

Preparation for the most recent NCATE visit, C2F2 notes, focused on “areas that were
cited as needing improvement in the previous NCATE visit,” and “it was much easier to prove
those because we knew those would be the things they [the BOE members] were going to look
at first.” Subsequent discussion yielded that the EAS was especially helpful in addressing those
areas of concern “not because we weren’t doing it [addressing the areas] because I think we
strengthened the program in those areas but because we were able to prove it. We could
triangulate [the data] well.”
Finally, C2F3 states that having an EAS is “absolutely vital, and we don’t have any choice. We have to do it for NCATE accreditation.” While it is noted as necessary, “my overall impression is that’s an intensive amount of work.”

**Forces of Change and Change Agents**

Responses to forces of change and change agents are to the protocol item: *Do you view an EAS as a force of change or a change agent? Discuss your response.*

**Assessment coordinator**

C2AC presents reluctance in viewing an EAS as a force of change or a change agent. “I don’t know that I would call it a force of change. I think it is a mechanism to assist with change, but I don’t know that I would call it a force in and of itself.” C2AC discusses the prevalence of change and how change processes are not easy. Continuing, C2AC believes “that it [the EAS] is a part of the assessment system,” and “it is a very dynamic part.” However, the participant’s comments indicate that changes would occur regardless, “so I see it as a way to facilitate change but not as a force of change.”

**Faculty**

Presenting some optimism, C2F1 believes “that it is or at least that’s how it should be.” For this faculty member, an EAS allows for looking at “what we’ve done before so that it informs our decisions,” and data can be reviewed “across the board” or by program. “We can identify what’s working and what’s not working and know what we need to go back and do.” For C2F1, it facilitates change because it allows for informal decision-making. It “provides us a lot of information, and we have used that information to make changes in our programs.”

“Of course it is,” C2F2 states.

It’s a force of change because, literally, people are forced to change in order to be able to use it. I mean, you have to reconfigure, rethink what it is that you’re doing so that you can get information in that form.
This faculty member believes that it is a force of change also because “cold, hard facts tell you about what has happened or what is going on,” and you can then make decisions about what needs to be done. Thus, “I’ve got to use assessment as a reason for change, for making changes.” C2F2 remarks that this is not without resistance, though, and:

that’s why we’re not using it in graduate school because the people there are a little more frozen in time. ‘I’ve done it this way for this number of years, and, therefore, I’m gonna continue to do it this way.’

“Yes, it is a force of change, and it’s a forced change sometimes. It’s not easy just like any of the literature says about change.” C2F3 believes in change and in adopting innovations that are advantageous but notes that “in some areas, I’m being forced to change, and others, well, it’s a force of change.”

These changes go beyond automating previous practices, C2F3 notes. “I definitely think new things are being done. It’s way more than automation.”

**Instructional Roles**

Responses to instructional roles—by faculty only—are to the protocol item: *Discuss the role an EAS can play in a faculty member’s work and how it can be used to enhance his or her work.*

“I think that [it does] in terms of monitoring, especially when you look at field experiences.” C2F1 discusses that the EAS allows for field experience data collection accompanied by candidates’ “reflections on what they’ve seen” and that it provides faculty with “qualitative information on what the candidates are taking away from the course.” C2F1’s comments reflect that a faculty member can know what the candidates are “seeing or are they matching theory to practice. Are there confusions about the kinds of things that they’ve seen?” Continuing the discussion in that respect, the EAS “could play a very important role in given
the data about how the candidate is perceiving what he’s seeing [in] the classroom and if there are any types of misconceptions that need to be addressed.”

C2F2 identifies management as an enhancement. “Faculty, I have found, don’t mind using it at all, and it’s very effective and efficient in terms of being able to manage the classroom.” This classroom management, C2F2 identifies, involves collecting various types of data for course-based requirements. The “data analysis is so important in what it is that we teach, so the fact that it collects data is one thing, but the ability to analyze data is another.” This participant believes that having course-based data is beneficial “in terms of multiple years or multiple [terms], the ability to look at a specific thing over time enhances a faculty member’s work.” From a teaching perspective, this faculty member describes, the collection of “student work samples provides an opportunity to monitor” student performance. “I think it’s an enhancement in terms of efficiency of use. I think the [efficiency] probably enhances the faculty work.”

“My first thought is that it’s good proof of what the students can or can’t do,” C2F3 presents. For that reason, C2F3 thinks that “the role of an electronic assessment system is very, very important in my work as a faculty member.”

Assessment Opportunities

The response to assessment opportunities—by the assessment coordinator only—is to the protocol item: Discuss what you believe a university’s EAS allows an assessment coordinator to do what would not have been possible otherwise.

C2AC believes that the capability “to obtain a broad picture for different stakeholders” is an advantage to an assessment coordinator’s work. It has also:

allowed me to provide the dean with some information in making budget decisions that would have been much more labor-intensive before, and [he or she] would have
probably not have had the manpower to make that analysis happen prior to the electronic assessment system.

Decision-Making Contributions

The response to decision-making contributions—by the assessment coordinator only—is to the protocol item: *Describe how you believe an EAS contributes to decision-making (candidate, program, unit, etc.).*

At the candidate level, C2AC describes, “we can pull their field experience data and see where they’ve been thus far and make a decision deliberately only where they’re going” to be placed for future experiences, and this participant notes how that data can be analyzed each term to ensure that placements are diverse. “In terms for programs and at the unit level, all of the student teacher data is aggregated and given back by program so that we can make decisions on programs.” For example, C2AC describes, “student teacher evaluations might have found that technology was not integrated across the board.” Further, it is noted that this initiates a review of courses to determine if revisions in course content are warranted to address the students’ concerns.

Case Summary

Case 2 presents what appears to be a strong presence of the EAS within the teacher education programs. The assessment coordinator and three faculty members included in the case study reflect on decision-making based upon data collected via the EAS. In some instances, they note that the EAS not only facilitates that data collection but makes it much more efficient, and the efficiency promotes more timely and informed decisions to be made about curricula changes and program improvement.
The influence of the EAS on field experiences also seems to be prevalent. C2F1 discussed extensively how candidates’ field experience placements are facilitated almost entirely through the data gathered from the EAS. C2AC and C2F2 alluded to this as well.

There is agreement among the participants that the EAS facilitates change, and the implication seems to be that the EAS’s technology is a strong presence in that change. The participants note repeatedly how the technological functions expedite the data-supported decisions that are made, and this efficiency serves them well for accreditation requirements.

Case 3

Context

Case 3 presents the context a university in the southern United States that holds institutional accreditation by the Southern Association of College and Schools (SACS) and NCATE accreditation for all teacher preparation programs.

According to the university’s Fact Book, the college within which all teacher preparation programs are housed had an enrollment of nearly 3,000 in the 2005-2006 academic year. During that academic year, a total of 302 teacher education degrees at the undergraduate and graduate levels were conferred. The degrees conferred represented a broad spectrum of teacher education programs including early childhood education, educational leadership, educational technology, elementary education, health and human performance education, secondary education, and special education to name a few.

As of the fall 2006 term, which is the term in which the most current Fact Book was published, faculty within the college totaled 39. Of those full-time faculty members, 8 held the rank of professor; 12, the rank of associate professor; 16, the rank of assistant professor; and 3 at the rank of instructor. Seventeen of the 39 (44 percent of the college faculty) were tenured.
The EAS utilized at the university in Case 3 is a commercial system. The spring 2007 term was the first term in which the university used the current EAS. Prior to spring 2007, another commercial EAS was utilized. Within the current EAS, candidates create course-based electronic portfolios at the faculty’s discretion, record field experience data, and complete surveys or other types of evaluations. The EAS avails faculty of marking on candidate artifacts electronically, and those marked comments are available for the candidates to review by accessing that document within the EAS. Faculty have access to data gathered from instruments they create for course-based evaluations or data collection.

Positive Effects and Advantages

Responses to positive effects and advantages are to the protocol item: Discuss the positive effects and advantages that you believe a university’s electronic assessment system (EAS) can have on teacher education programs.

Assessment coordinator

“I think the main thing I see,” C3AC describes, as an advantage is that the EAS “can facilitate the generation of reports, which then can be analyzed and can be used to go back for program redesign or to assist a teaching candidate with advising.” The EAS provides a “nicely packaged” way “to truly facilitate the assessment of your programs, your candidates, the unit.” Providing data “to improve your programs” is “the only reason you have assessment,” and “I hope it [the EAS] will have the positive effect that I think it will.”

Faculty

C3F1 discusses that having “an assessment system where you can monitor the students and see their work over time” is a good idea. It is “important for us in evaluating our programs, but I also think it is important for the students to see their work over time.” An electronic portfolio is “a big advantage” in accomplishing that. “I think from our perspective, it’s given us
a rich data source that we can go back to in refining our programs course by course and program by program.” It also “allows us to ensure that we have some consistency in records and reporting.” Technology is so strongly present in society, and “I think that giving candidates opportunities to work within a system like that in courses forces them to become technologically adept beyond text messaging and things like that.”

C3F2 compares advantages for students and the university and identifies the primary advantages as data collection and consistency. Historically, candidates submitted a culminating portfolio during their student teaching term only, and “it was truly not a representation of their work.” Now, “they’re being forced to upload documents at every course level,” and “I think you’re building a better picture” of their performance through “the creation of the electronic portfolio.” It provides “consistency among their work products that you have signature pieces for every class, and because you’ve collected it along the way, you’re truly going to have a representation of their best work.”

For the university, C3F2 describes, the EAS “serves as a method of data collection on our students so that we can maintain records on them for things like accreditation.” That data collection is “a major advantage because without that, we would not have a great way of tracking, of keeping track of data.” C3F3 notes that it provides “consistency as far as the data for NCATE” and the capability to “consistently look at how our students are doing.”

For C3F3, after “training and after we are able to internalize all of the specific aspects, I think that one positive effect is time.” Others are consistency and validity.

I guess some people would think that the standardization is a positive effect because we’ve got the same instruments in place. I realize that that is a positive effect, but I’m not a believer in total standardization. I worry about too much standardization.

Beyond those, C3F3 describes, one fairly obvious advantage is “having the data easily there. I would say accessibility would be an advantage.”
Negative Effects and Challenges

Responses to negative effects and challenges are to the protocol item: Discuss the negative effects and challenges that you believe a university’s electronic assessment system (EAS) can have on teacher education programs.

Assessment coordinator

According to C3AC, a significant challenge is that “technology can be tricky sometimes.” While “we have embraced technology more so than ever before,” the challenge of overcoming the technology “could become a negative impact and impede the facilitation of this innovation.” Other challenges are “learning the new system and what it can and cannot do” and addressing the “training that needs to be done.” The buy-in from people “and making sure that everybody is comfortable with what they’re doing” is a challenge. Likewise, overcoming resistance is a challenge.

Faculty

“The biggest negative effect I see with an electronic assessment system is, or the perception is anyway,” C3F1 notes, “that we end up standardizing a lot of things.” While standardization “ensures consistency across programs, it also to a certain extent, I think, limits the instructor’s ability to customize a course.” Standardization “can be constricting, and I think each candidate could certainly benefit from each instructor modifying instruction to what emerges in the class.” C3F3 agrees, positing that while standardization may have advantages, “I don’t want to be locked into an instrument or a system that I can’t individualize for my students, so I think that that might in some cases be negative.”

A challenge “is to make sure that the students understand that when they put something in the assessment system, it’s going to be available into perpetuity.” Candidates will begin to
lose confidence in an EAS if “that data goes away” after they put “so much time and energy into [an] assessment system.” Continuity is another challenge because:

there’s no guarantee that this one [the EAS] will be around five years from now, six years from now, so that’s something that needs to be addressed. I think you have to establish confidence that the data is there, will be there, and that it’s secure.

C3AC and C3F3 agree that the technology is a challenge. A third challenge C3F3 depicts is that “there’s a wide array of abilities as far as comfort with technology, depending on the level of comfort and expertise with technology.” C3F1 notes that, thus, “what actually ends up in the candidates’ portfolios may or may not actually be representative of what they’re capable of doing with technology. It might be more representative of the extent of what the faculty can do with technology.” In other words, a faculty member whose technology skills are novice may limit what his or her students are expected to do with technology, especially with the EAS.

C3F2 denotes the “cost to the students” as a negative effect. Having to incur an additional educational expense has “presented a financial hardship” for some of them.

Beyond the cost, C3F2 identifies everything involved with “the transition from one system to another.” Regarding challenges:

yes, just learning the new system was the biggest challenge. I wasn’t totally comfortable with [the former EAS], and then I had to abandon that and move to something new. Again, I was reluctant. I was hesitant to make a change.

“Well,” C3F3 expresses agreement that, one significant challenge is “adjusting.” A challenge “would be, I guess, for those of us who are not as assessment system-savvy to adapt. We have to be trained.” A great deal of time is involved, and garnering participation in spite of that is a challenge. Having “buy-in for the skeptics who just don’t like change” is certainly a challenge, too.
Features, Elements, and Tools

Responses to features, elements, and tools are to the protocol item: Describe the features or elements (e.g., evaluation instruments, survey tools, demographic data options, etc.) of an EAS that you feel are most valuable.

Assessment coordinator

C3AC identifies the most valuable tools as “anything that makes the development of a survey, a form, a rubric.” Another valuable feature is demographic data, and the EAS also has: a lesson and unit plan builder, which I was able to customize. They also have a wonderful standards’ feature as a drop-down [list] when students get to the point where they’re developing a lesson plan, and it asks or prompts them to add standards, so that, I think, is a wonderful feature because otherwise the students would have to go to multiple sites and look these things up. Our program outcomes are also there.

Ultimately, though, the capability of collecting data electronically is the most beneficial feature of an EAS.

Faculty

Agreeing with C3AC, C3F1 and C3F2 discuss how the EAS’s “lesson planning tools” are beneficial. “I like the ability to mark on the documents.” For the most part, C3F2 says, “I think the faculty members really like using the markup text where you can mark on the document a student submits.” It prevents the need for students to submit documents that are marked on electronically within a word processing application because that can result in losing the original work. Also, C3F1 offers, “I like how work can be submitted continually through a program so that at the end, they have a collection of their best work over time.” Other than instructional tools, “I think having data in multiple systems and being able to share that across systems would be good.”
C3F3 relates the electronic portfolio to workforce preparation. “Well, I think the development of portfolios is valuable. I see this as possibly becoming a part of our world as far as applying for jobs, so I think that’s very valuable.”

**Electronic Assessment Systems and NCATE**

Responses to electronic assessment systems and NCATE are to the protocol item:

*Discuss your overall impression of an EAS and its effect on the NCATE accreditation process.*

**Assessment coordinator**

“As the assessment coordinator,” C3AC says, “I view it positively because without it you’re not going to gain accreditation. NCATE is looking for an electronic system for your assessment.” An electronic system “makes it [assessment] more proficient.”

**Faculty**

C3F1 believes that “it certainly facilitates that process. It makes it a whole lot easier to complete, to get things together. I think it’s a powerful addition to what we do.” The technology should make the process much more smooth and efficient. “I think it gives us an ability to paint a more accurate picture of the college during that process.” With the influence of:

-an electronic assessment system, you do get into the mode of refining programs, and that’s what you ultimately want to do and what NCATE wants to do. No matter where you are, the assessment system allows you to do that.

C3F2 illustrates how the EAS’s influence will be “extremely beneficial” for NCATE and SACS accreditations.

It gives us a way to manage the data. I think this will allow us to control the data, not in what goes in but to look for certain students, to manipulate the data, to pull out what we need that falls into a certain category. I think it gives us different ways to assess the data in preparation for submitting those reports to those accrediting agencies.
“Well, I think it will be useful, and I wonder if the NCATE accreditation process is not possibly driving the electronic assessment system because it [the EAS] will definitely be an advantage.” C3F3 continues to present that the EAS “should make our process easier to facilitate and accomplish. My overall impression is that it’s a good tool. I think we can learn from it.”

Forces of Change and Change Agents

Responses to electronic assessment systems and NCATE are to the protocol item: Do you view an EAS as a force of change or a change agent?

Assessment coordinator

For C3AC, an EAS:

definitely is an agent of change because if we weren’t required to have an electronic system for accreditation, I don’t know that we’d be moving as quickly or this deeply into a system. I think we would continue to use the things that we had in place.

The EAS has prompted “recording data electronically that was handled by hand before.” Even though not all assessment processes have been migrated to an electronic format, “I definitely see this [the EAS] as being the change agent. I don’t think the role of even the assessment coordinator would have been as significant without this electronic tool.” The EAS allows for so much “that I really see it facilitating the whole process” of assessment.

Faculty

Agreeing, C3F1 states, “I think it, yes, on a couple of different levels.” As an instructor, “I think it is almost like an accountability measure knowing that the signature pieces from your course are going to be out there for everyone to see just sorta holds you to a certain standard.” Being held to such a standard works to “affect change at the instructor level in how we’re operating in courses, delivering our courses.”
C3F1 expands the change rationale beyond the course level that “in the process of refining, continuously refining our program, having all this data readily and easily available allows you to monitor your progress and identify those areas that need attention.” It “gives us real-time data that allows us to make course corrections at any time.”

In response to whether an EAS is a force of change or a change agent, C3F2 states, “Yes.” In some instances, “faculty members must be forced to change. They must be forced to embrace technology.” Some individuals will embrace change; others will avoid it. For some, “if you do not force them to assess something on [the EAS], they would be very, very reluctant with the system to even trying it.” The EAS can facilitate some change, but it does not ensure acceptance from everyone.

C3F3 “think[s] it does.” The EAS introduces and facilitates change, and “I think change is good. I think change is good because I think curriculum should be fluid. It should never be static.” Regardless of “a few qualms about the electronic assessment system and all the work it is entailing for us, I think it has the possibility to do some good things.”

Instructional Roles

Responses to instructional roles—by faculty only—are to the protocol item: Discuss the role an EAS can play in a faculty member’s work and how it can be used to enhance his or her work.

C3F1 describes that signature assessment pieces in each course are helpful, and those pieces can be used to inform instruction for the next term. “I can monitor from [term] to [term] the quality of those pieces to determine if what I am and am not covering” needs to be addressed.
C3F2 views the EAS as a tool. “I view it as separate from the work that I do for the college of education. I use it as an assessment tool, but it’s just a different form of assessment to me. It’s not enhancing what I do.”

C3F3 describes the EAS’s emerging presence in courses. “It’s becoming a significant part because we are incorporating it, and I think I can use it to look at my teaching.” Despite the challenges, “if it’s beneficial to my students, I of course want to use it.” It provides a means “to look at results, look at the signature pieces, look at any trends, and reflect on my practice.” The “big picture for me” is to determine:

how I can use it [the EAS] to improve my performance as a teacher, which will result into better performance of the pre-student teachers, so if I can find anything to do that will make me a better teacher of teachers, then that’s what I aspire to.

Assessment Opportunities

The response to assessment opportunities—by the assessment coordinator only—is to the protocol item: Discuss what you believe a university’s EAS allows an assessment coordinator to do what would not have been possible otherwise.

C3AC sees “the electronic component as being the most beneficial part.” One example is “the speed of generating a report.” C3AC notes that “we’ve always done assessment,” but the EAS provides greater efficiency in assessment practices. The outcome of using an EAS is “the best possible feature,” and that ease of data collection facilitates the assessment process. The technology allows an assessment coordinator to “have access to [the data] to be able to generate and analyze” it.

Decision-Making Contributions

The response to assessment opportunities—by the assessment coordinator only—is to the protocol item: Describe how you believe an EAS contributes to decision-making (candidate, program, unit, etc.).
The EAS provides data in efficient ways for decision-making. C3AC affirms, “Definitely.” The presence of an EAS also facilitates the reflection of current practices and assessment measures. It requires “reviewing our current assessment pieces to see if they still fit with what we want to do in this electronic system, and developing new assessment pieces” if necessary.

Case Summary

No opposition to the EAS is revealed in the Case 3 participants’ responses. A repeated concern, though, is the standardization of assessment practices through the use of signature assessment pieces per course. A signature assessment is a common assessment used in every section of a course, regardless of the instructor of a given section. For two of three faculty members, this posed a concern that an instructor’s freedom to alter a course is compromised. While no participants objected to the signature assessment pieces, they did express concern over standardization; however, all did note the advantage of collecting data from common assessments for decision-making, and there seems to be a consensus that the EAS provides efficient data collection capabilities.

All participants to some extent discuss collecting data for program improvement, and that interest seems to be for genuine, personal reasons beyond the fact that NCATE stipulates the need for program improvement based upon data. These participants note the importance of gathering course-based data, reflecting on that data, and implementing changes per course to ensure that the learning experiences for their students are the most appropriate and beneficial. They see the EAS’s tools—beyond those for data collection—such as electronic portfolios and artifact commenting options as components that aide them in the course reviewing cycle.

Another consensus seems to involve the technology of the EAS and the challenge it presents. The participants discuss the challenge that an EAS presents from the perspective of
general technology utilization. At some points, the participants predict how the technology challenges of a new EAS will affect its utilization. They seem to value the EAS and what it provides to them, but they express an acute awareness of the challenge facing both faculty and students in overcoming the technology of the EAS to approach the EAS’s assessment tools.
CHAPTER 5
RESULTS OF CROSS-CASE ANALYSIS

Introduction

The primary research question presented in Chapter 1 identifies the study’s fundamental intent: To examine the factors and processes that faculty and assessment coordinators perceived could facilitate or hinder the diffusion of an electronic assessment system in teacher education programs. That examination was executed through the construction of the three case studies presented in Chapter 4. By employing the constant comparative method of qualitative data analysis (Glaser & Strauss, 1967), the researcher was able to conduct a thematic analysis of each case study and identify common, cross-case themes that reflect the primary research question and the supporting research questions.

The themes identified during the cross-case analysis reflect two general criteria. First, each theme in some fashion represents the scope of the study outlined in the research questions, and second, the themes are represented across all three cases. The researcher felt that only themes that were represented in all three cases held adequate significance to be identified as cross-case themes. Thus, each theme presented here emerged within at least one interview in each of the three cases.

A thematic analysis matrix (see Appendix F) was constructed during the analysis of each interview transcript. The data and potential themes that emerged from that analysis were reviewed multiple times, and the potential themes were categorized into broader themes during each review. The multiple analyses resulted in the two researcher-designated themes presented as advantages and challenges without sub-themes defining each.

Each theme is supported by sub-themes that emerged from the analysis as presented in Figure 5.1.
Data reveal four categories of advantages that were significant in each of the three cases. Those categories are: accreditation, data collection, data management and utilization, and electronic portfolios. Each of these categories identifies a feature or tools of electronic assessment systems (EASs) that participants find present advantages to teacher education programs. Figure 5.1 presents a number of details related to each category within the theme, and those are the details upon which the cross-case analysis summary presented here is based.

**1A: Accreditation**

Participants’ comments reveal that an EAS has advantages relating to accreditation, specifically relating to National Council for Accreditation of Teacher Education (NCATE) accreditation and the data required for such accreditation.
Certainly, the matter of accreditation has strong relationships to the data-specific sub-themes; however, the emphasis participants placed on their accreditation remarks warrants its isolation from the data-related matters. While participants’ involvements in the NCATE accreditation process vary from assessment coordinators who are involved integrally to faculty who serve in support roles on committees, each participant who presents remarks related to NCATE do so with the conviction of seasoned assessment professionals. Their responses regarding data collection and use are restricted mostly to their professional contexts; however, in some instances, participants have experiences relating to assessment that permit them to comment on its relationship to responsibilities outside those of their professional roles.

A general consensus regarding the relationship between an EAS and NCATE emerged through the participants’ responses from each case study, and that consensus is two-fold. First, participants believe that an EAS is require by NCATE, and second, the EAS enables a university to satisfy the accreditation standards more efficiently and beyond expectations or capabilities than what is possible without an EAS.

The participants use words like “vital,” “essential,” and “necessary” when referring to the EAS. C1AC discusses how an EAS seems attractive to accrediting agencies and that is becomes a significant tool in the accreditation process. Its significance is measured by the extent to which it demonstrates an institution’s worthiness of accreditation, according to C1F1.

A comparison of participants’ responses reveals how each participant has a different view of the relationship between NCATE and an EAS. C1F1, C1F2, C1F3, C2AC, C2F3, and C3AC discuss how utilizing the EAS is an NCATE requirement. They note that a component of the accreditation process involves demonstrating the use of an EAS in teacher education programs. C2AC remarks that “the impetus from an accrediting body requiring us to have a
data collection system is going to serve us very well,” and C3AC notes that institutions would be less likely to have the level of use they currently do without NCATE’s advocacy of it.

Interestingly, the three assessment coordinators present three unique, initial perspectives of the NCATE-EAS relationship. C1AC identifies that an EAS “looks great” to accrediting agencies like NCATE and SACS but seems to believe that a certain level of superficiality exists with all EASs. C2AC sees the current status of EASs as a result of NCATE’s push for universities to demonstrate a strong technological presence in their assessment practices. C3AC notes that the presence of an EAS is “a requirement,” and that declaration is made without hesitation. While all three assessment coordinators agree that the EAS is of some value in regard to accreditation, they each seem to have varying opinions on how strongly it is mandated by NCATE.

Faculty participants, however, have no such discrepancies among their responses. Faculty responses are in general agreement that an EAS is required, facilitates the accreditation process, and drives assessment and program improvement. C1F3 states, “We gotta have it. The better it is, the better we are.” C2F2 notes that “it made everything better. I mean, it made everything easier,” and C2F3 believes that “it’s absolutely vital. We don’t have any choice, and we have to do it for NCATE accreditation.” Since the assessment coordinators are responsible for coordinating all assessment practices within teacher education programs, one can surmise that the faculty’s collective perspective on EASs and their roles in assessment is the result of the assessment coordinators’ positive portrayal of EASs even if that portrayal is not the most accurate reflection of the assessment coordinators’ opinions.

**1B: Data Collection**

Participants find that the major advantages for data collection are the efficiency with which an EAS collects data and the instruments available for data collection.
Efficiency

Several participants comment on the efficiency an EAS provides to data collection measures. C1AC, C1F3, C2F1, and C2F2 provide examples of how data collection is much more timely and conducting with much more ease because of the EAS. C2F2 expands those remarks to discuss methods of data entry, which are required in order to have data that can be used within the EAS, and the interview reveals that the presence of an EAS permits for data collection procedures to be much more efficient because of the technology. That is amplified in C3AC’s discussion of the advantageous efficiency that the EAS provides. “I see this as a way to facilitate” data collection, C3AC shares. It prevents the assessment coordinator from having to collect all data manually, and C3AC notes that “I don’t wanna be the one to collect everything, especially that way.”

Instruments

Participants who elaborate on data collection discuss the significance of the data collection instruments. Several, like C1AC, C1F2 and C2AC, note the advantage of field experience data collection instruments. They cite that collecting field experience data is extremely important for reasons including diversity, which provides imperative data for field experience placements. C1F1 finds value in survey and evaluation instruments that are used to gather student input and access student work, respectively. C1F1 provides an example of using a survey tool.

Let’s say we want a gate at the front end [of admission to a teacher education program], and I’m thinking of one gate that we have in teacher ed. is where we let students go online and take a disposition survey based on how suited they were for education. They were asked questions about classroom management, working with students from poverty backgrounds, low SES students, minority students, and after they answered these questions, the data was aggregated.
Regarding instruction, C1F1, C1F3, and C2F3, express how they value what the EAS provides them. C1F1 describes that having data collection instruments available “helps me as far as knowing where a student’s been and where they’re going.” Beyond that, “assessment in the form of rubrics is a great help.” C1F1 discusses evaluation instruments and notes that:

I couldn’t function without them. It’s a gauge that tells everybody where we are, where are our strengths, where are our weaknesses so that we are constantly in a progressive mode where we’re improving, we’re being innovative and progressive because of evaluation instruments and because we know where we need to improve.

C1F3 describes the importance of “gaining data” that “we’re able to use” in our classes, explaining that an EAS “can be required in our classes for assignments to be graded with rubrics and what have you.” C2F3 concurs:

I think that all evaluation instruments of any type are important while we do them for the college of ed., we do them for the university, and in each of my classes, I have an evaluation instrument usually at midterm and at the final.

For C3AC, “anything that makes the development of a survey, a form, [or] a rubric” is an advantage to data collection. C3AC discusses the importance of instruments used to collect data on candidate performance, specifically noting the evaluation of artifacts and portfolios, “so you look for this new system to help you with that [in order to] receive more information than what you had before.”

1C: Data Management and Utilization

Participants’ perceptions regarding data management and utilization are categorized into (1) decision-making and (2) organization. Data reflect that decision-making addresses matters such as advising, curriculum, dispositions, and field experiences. Organization refers to the infrastructure the EAS provides for data management.
Decision-making

The role of an EAS in decision-making is one of the two thematic units upon which all 12 participants comment. The volume of comments regarding decision-making and an EAS denote its significance. In this context, that significance is described by the advantages participants identify.

C1AC discusses how decision-making can be difficult in itself. That difficulty, this participant believes, is compounded by challenges with data and data access. “To get the data just the way [we] need it to make decisions” makes the entire process easier, C1AC notes. The discussion continues, and C1AC describes that the data collection and management an EAS provides enables the decision-making process to be accurate, collaborative, and expeditious.

C1F1 provides rather specific examples of using an EAS’s evaluation tools for decision-making. One example involves a dispositional self-evaluation that candidates complete prior to being admitted to a teacher education program. C1F1 explains how candidates may complete the evaluation and meet with an advisor moments later to discuss the results. This provides “an assessment tool that we could use and show them and try to counsel them out of education” if their responses or scores fall below a predefined benchmark.”

The EAS also allows C1F1 to examine data that “shows the weaknesses and strengths of a program, of a class, of a set of students. [It shows] where I need to review, to remediate, to improve.” While some critics might disagree, C1F1 believes that these types of evaluations are not feasible without an EAS. Concluding, C1F1 notes that “because I’ve got the information I need, I can make a better educated, informed decision, and I can discuss issues with a student because I’ve got all the data and all their work right at my fingertips.”

C1F2 relates decision-making and an EAS to field experiences. Noting the important of reviewing field experience data, C1F2 makes reference to tracking students’ field experiences
to make decisions about future placements. “I like the electronic repository. They [the students] now have an electronic record, and I don’t have all the forms.” Overall, though, C1F2 believes that the EAS facilitates decision-making because “we all stop and look at what we’re doing, [and] I think it’s a good thing.”

C1F3 and C2AC present similar rationales for the significance of an EAS in relation to making decisions about candidates. C2AC believes that it is “important to track individuals and say that we could give them our endorsement that they’ve had experiences” necessary for certification and describes further how this leads to decisions about field experience placements.

If they [the candidates] are working on certification in grades 6 through 12, we could give physical evidence that they have seen every grade level within that band of certification. We can track to make sure that they have had exposure and experiences to the full breadth of their certification band. We can pull their field experience data and see where they’ve been thus far and make a decision very deliberately on where they’re going to be placed.

Further, C2AC discusses the importance of the EAS’s ability to give multiple individuals access to the data they need for departmental or programmatic decision-making. “It’s very important that others look at the data and make their own decisions rather than me just analyzing it.” Beyond that, C2AC describes how “one of the advantages is providing a framework” and provides the following example.

As educators, I believe as a group we tend to make “coffee table decisions” or “coffee pot decisions” where we talk about “I’m having difficulty with such and such, and I’m gonna make this change.” Well, the electronic assessment system has given us a framework to make much more systematic changes because higher education, just like P-12 schools, has some turnover, and so this allows us to have some history without just relying on the person who’s been there the longest. So, I think that’s an advantage.

In broader terms, C2AC discusses decision-making and an EAS in relation to the Professional Education Unit. “In terms for programs and at the Unit level, in the spring of each
year all of the student teacher data is aggregated and given back by program so that we can make decisions on programs.” C2AC provides an example of this type of decision.

For example, student teacher evaluations might have found that technology was not integrated across the board. Where do the changes need to occur in coursework to better equip our student teachers to do that? Is it a hardware problem in the schools, and do we need to make a change using that analysis?

Thus, C2AC describes:

I think that it [the EAS] has forced us as a faculty to really analyze what we do and why we do it rather than it [the decision-making] being, like I said earlier, “coffee pot decision-making.” It’s made us a little more reflective in our decisions because we have to back it up. Now, we can go and see if the data supports this decision, and that sometimes is just as important as looking at numbers and saying, “It appears that we need to do something with this.”

C2F1 summarizes the role of the EAS in decision-making with “we have utilized our electronic assessment system greatly to make decisions about our teacher education program.” That is followed by a number of specific examples—one being how “we use that data on field-based observations and field-based experiences in terms of helping us determine candidacy requirements.” Examples provided relate to how extensively candidates “have worked with special needs students” and whether the candidates “have been in schools with high diversity.” Those types of data, which are tracked by the EAS, enable the faculty “to make placements for clinical practice and for student teaching.”

Another type of decision C2F1 discusses is based on candidate dispositions. “We use the electronic assessment system to help us gather data on candidate dispositions.” That data is reviewed and used for candidacy decisions.

C2F1 also discusses how the EAS facilitates decision-making about programs. “We’ll be taking a look at some things for the next [term] so that it informs our decisions.” By doing that:
we look at what we’ve done before. We look at it across the board. We look at it by program. We can identify what’s working and what’s not working and know what we need to go back and do. We are gathering [data] through our electronic assessment system [that] provides us a lot of information, and we used that information to make changes in our programs.

C2F2 likewise comments on the relationship between decision-making and field experiences. The EAS:

helps in decision-making because you can tell not only how many field experiences [a candidate has] but where they were, and they you’re able to determine the diversity of the placement. You can adjust to make sure that the student is getting the appropriate kind of preservice field experience hours.

According to C2F2, the EAS gives data’s “cold, hard facts” and what those facts “tell you about what has happened or what is going on, and then” the issue of “OK, well if this is the case, then what I am gonna do about it?”

C2F3 expresses, “I am highly nervous of making changes just based on data.” When questioned about this comment, C2F3 clarifies that the concern is relying on quantitative data alone. The discussion continues, and it is revealed that C2F3 feels as though EASs are quantitatively-situated; therefore, decisions based on quantitative data alone may not reflect the most informed decisions because including qualitative data could provide a more comprehensive foundation from which to base decisions.

C3AC comments that, “I see it as a way to truly facilitate the assessment of your programs, your candidates, your unit,” and that assessment, it is noted, informs all decisions. C3AC continues to describe how the EAS provides data needed for decision-making and how the EAS’s role in that process provides an assessment coordinator the opportunity to be involved in the decision-making. This is credited to the ease with which data can be extracted and disseminated via the EAS. “With this electronic assessment system,” C3AC notes, “you truly are the keeper, the facilitator if you will, of the data and what you truly do with it.”
Among the examples provided are those related to evaluating the implementation of program outcomes in programs and the diversity represented in field experience placements, both of which, this participant mentions, rely on data collected within the EAS.

C3F1 likes “the idea of having an assessment system where you can monitor the students and see their work over time. I think that’s important for us in evaluating our programs.” C3F1 continues to discuss how these program evaluations contribute to decisions made on candidates and programs.

In the process of refining, continuously refining our programs, having all this data readily and easily available allows you to monitor your progress and identify those areas that need attention [and] gives us real-time data that allows us to make corrections at any time.

Moreover, C3F1 describes how the EAS has “given us a rich data source that we can go back to in refining our programs.”

C3F2 feels that “a major advantage” of an EAS is that “without it, we would not have a great way of tracking data.” Further, this faculty member notes that accurate decision-making is contingent upon the availability and utilization of valid and reliable data, and the EAS appears to provide that to this participant’s satisfaction.

Finally, C3F3 enjoys how the EAS allows faculty “to consistently look at how our students are doing.” This, C3F3 feels, allows for accurate decision-making with regard to course and program changes.

Organization

Several participants discuss an EAS advantage that the researcher classifies as organization. They describe how the presence of an EAS promotes greater organization in their assessment practices and use of data. One significant factor seems to be the technology and not the EAS necessarily. As C1AC states:
I think the less paper you have, the more organized you’re going to be, and I think if we can have reports posted on a Web site, saved on a disk, [or] in a backup system, that’s a lot more effective than having a filing cabinet full of old data that we have to full paper by paper.

Organizing data, C1AC believes, is “a slow process, and to have a system that will organize and document and assist you in that process is essential,” and the EAS provides “an organized way and an efficient way to input data into a database where you can keep track of a lot of information that could get really disorganized if you didn’t have a system to input that into.”

Reflecting on past experiences, this participant compares paper-based to technology-mediated data management and expresses an appreciation for what capabilities the technology provides.

I think you have to streamline which aspects of the system that you really need to use. If you use it and it’s too complex, then organization’s out the window, but I think that the fact it’ll organize what you want it to is a good thing with these systems. That’s something we’re working on here—to get [the EAS] to where it needs to be.

C2AC comments on data organization within an EAS and notes the EAS’s ability to organize data for comparison. “I think the value of a question being raised and we now have a mechanism where we can look at data in different and new ways is very valuable.” Continuing, C2AC discusses how such organization facilitates efficient “data collection, analysis, and reporting.”

C2F2 also comments on how the EAS’s organization of data allows for easy access to data and use of it and notes the advantage of having data organized in an easy-to-decipher fashion. Because of this, the EAS allows a user to extract data by query so that the resulting report is tailored to the person’s needs.

In using the EAS for course revisions, C2F3 describes how data available within the EAS assists in that process. “I like being able to think about it, work it out, rewrite it, and then
contribute or add it [the revised course-based assessments] to the assessment system where I’ve done more thinking and have it a little more organized.” This faculty member reflects on how the EAS has allowed for the organization of course-based assessment in a central location where all individuals (e.g., the instructor, the assessment coordinator, etc.) who may need that data have access to it.

C3AC’s initial remarks about data organization within the EAS relate to how it “can facilitate the generation of reports.” Those reports “can [then] be analyzed and can be used to go back for program redesign or to assist a teaching candidate with advising.” From this assessment coordinator’s perspective, “the speed of generating a report [because of] the electronic component [is] the most beneficial part. I see it as a way to truly facilitate the assessment of your programs, your candidates, your unit.” The data needed are “nicely packaged,” and those who need it “have access to be able to generate and analyze the data.”

C3F2 feels that the EAS provides an “extremely beneficial [way] to manage the data, to manipulate the data, to pull out what we need that falls into a certain category.” Citing examples of searching for data on candidate GPAs [grade point averages] and the comparison of student performance by classification, C3F2 qualifies this belief by noting that “I think it [the EAS] gives us different ways to assess the data in preparation for submitting reports to accrediting agencies.”

ID: Electronic Portfolios

A number of participants discuss the value of electronic portfolios. “You can put an electronic portfolio online that shows you the progression of your work, and it’s a showcase of your best work,” C1F1 describes. Further, C1F1 identifies that “you can also see growth and reflection in it,” and in some cases, candidates “can show a future employer their work,” and C1F3 identifies the electronic portfolio as one of an EAS’s “top features,” citing “the ability to
put the portfolio together in a common sense, easy-to-use form. I just think the portfolio is most important.” Continuing, C1F3 believes that one of the most commendable elements of an EAS is the ability for candidates to create the “electronic portfolio where we’re tracking our teacher candidates through their time at the university.” This sentiment is echoed by C3F3.

C2F1 discusses how “we use the electronic assessment system for electronic portfolios to help us document student teacher performance.” It also provides a mechanism for documenting student teachers’ “impact on [P-12] student achievement during their student teaching” experiences. Reflecting on general utilization of the electronic portfolio, this participant remarks that usage “tends to be a little compartmentalized,” and “I would prefer a portfolio that would be able to reflect everything all the way across,” referring to candidate growth from admission to program completion. Regardless, to some extent C2F1 believes “that it still allows you to go back and look at what did a candidate do as a freshman and compare that to something they’ve done during student teaching.” What emerges from further discussion is that the issue is not whether growth can be determined; the issue is that portfolio use across courses is inconsistent and reviewing or tracking candidate growth requires the reviewing of several “compartmentalized” portfolios.

Describing the utilization of electronic portfolios, C2F3 notes that “for our students, being able to use electronic portfolios in [the EAS] allows them to really show the work using all sorts of media.” Thus, C2F3 acknowledges an advantage of the electronic portfolios is that no other participant mentions: the use of media. For this participant, the significance of the electronic portfolio is not a candidate’s ability to construct it, but it is that candidate’s capability of incorporating different types of media in the portfolio that could not be included in a non-electronic portfolio. Beyond that, this faculty member feels that “our electronic assessment system [with] electronic portfolios allow for a much more real interpretation of
candidates’ skills,” which allows for a more accurate depiction and interpretation of a candidate’s knowledge and skills.

Similarly, C3AC explains that “we do require that our students or candidates develop a portfolio, and [the EAS] has a great tool for creating portfolios.” It is noted that these portfolios allow candidates to demonstrate growth as future teachers and allows faculty to judge the quality of course content. “The folio is aligned in our case to standards,” so, as C3AC describes, candidates demonstrate standard mastery through the portfolio.

C3F1 feels “that having an electronic portfolio is a big advantage.” Expanding on that belief, this participant remarks that “it is a big advantage for us to have students graduating and entering the workforce with this [the electronic portfolio] puts us heads and shoulders above other programs who may not.”

A primary advantage of an EAS for C3F2 is:

the creation of the electronic portfolio, which is the portfolio from which they can work on at any point in time from any place and can take with them or use to represent themselves when they go for interviews and things like that. I think it’s a very strong thing.

Theme 2: Challenges

Direct responses to protocol items regarding change and responses to other questions that pose references or inferences to change permit the rationale for the theme of change as it relates to two issues: acceptance and resistance to change and teacher flexibility.

Participants provide numerous remarks on change, the issues involved in it, and the effects it has within organizations. Those remarks present examples of both acceptance of and resistance to change. Some examples are generic in nature; others relate specifically to participants’ personal experiences with EAS adoption. In some illustrations, participants relate
acceptance of or resistance to change to standardization in assessment, which compromises teacher flexibility. In other illustrations, teacher flexibility is presented as a separate concept.

Each of the 12 participants notes the importance of change in the adoption of an EAS. Moreover, each of them discusses the issues and challenges that change presents. The issues and challenges that emerge within participants’ responses relate to (1) individuals and (2) the concept of teacher flexibility. In some examples, these two are related, and they are mutually exclusive in other examples. Issues and challenges of buy-in denote data that relates to an individual’s reaction to change, especially related to an EAS. The issue of teacher flexibility addresses the compromising of an instructor’s capability to customize course content because of standardization.

Participants describe a number of issues and challenges that individuals involved with the adoption of an EAS face. While many challenges toward buy-in are posed, one prevalent challenge that participants repeat is the basic issue of change. Participants describe how buy-in in many instances requires some extent of change, and the very nature of change challenges some individuals’ innate dispositions.

2A: Change

Participants’ responses regarding change are categorized into (1) acceptance versus resistance and (2) teacher flexibility. These two categories represent the prevalent issues concerning the sub-theme of change in the findings.

Acceptance versus resistance

Each of the 12 participants discuss factors or issues that challenge how widely accepted or resisted an EAS can be; all responses relate change to acceptance or resistance (i.e., buy-in). The responses addressing acceptance versus resistance are some of the most significant of all sub-themes in this study. They use personal and generic examples to amplify their ideas, and
nearly all participants respond affirmatively when asked about the relationship between an EAS and a change agent or a force of change. They indicate that the EAS:

- “forces change with the idea of it being a good thing” (C1AC)
- is a force of necessary change (C1F1)
- promotes reflection where “we all stop and look at what we’re doing” (C1F2)
- “expands, enhances, advances” (C1F3)
- “should be a force of change” (C2F1)
- forces change “because, literally, people are forced to change in order to be able to use it (C2F2)
- represents “a force of change” (C2F3)
- is a positive change and “definitely a change agent” (C3AC)
- provides a means for change and accountability (C3F1)
- represents “beneficial change” (C3F2)
- serves as a force of change (C3F3)

C1AC and C1F2 present a number of practical issues relating to users’ likelihood of accepting or resisting EAS implementation. As C1AC reflects:

The complexity of some of these things takes away from what we’re supposed to be doing, which is teaching people how to teach. I think sometimes attention is taken away from that and focused on the logistics of this big, monster electronic system.

In addition to complexity, C1AC discusses the importance of faculty buy-in. Imposing change within a group of higher education faculty, this participant describes, is difficult because those faculty are often “laid back individuals, [and] many of them are set in their ways.” While the initiative may be worthwhile and “forces change on campus with the idea of
it being a good thing,” C1AC believes “that it becomes a challenge because of the issue with the faculty.”

Beyond the greater issue of change, C1F1 discusses technical issues that affect EAS implementation buy-in. “You’ve got to run it, and if it has glitches, it can be frustrating. It can go down on you. I mean, the whole system can crash or be offline, and it’s frustrating. There’s a level of frustration there” that influences an individual’s decision to embrace or resist using the EAS. After pausing to reflect for a moment, C1F1 remarks with some timidity that “it’s kind of ironic that it’s [the EAS] a force of change and yet one of the greatest resistants to the system is a resistance to change, so change is coming at you from both sides.”

C1F3 discusses the challenge of accountability and defines it in terms of consistency in EASs and access to the EAS. One challenge noted is “how accessible it is. We need to get established. Yes, there is trial-and-error to get a good, usable program, but then we need to settle so that everyone’s familiar with that and are able to use it throughout their time at the university and possibly to continue when they are teachers. It’s that simple.” Unfortunately, C1F3 notes, “as various types of technology continue to burst forth, we need to keep up with that and utilize [it],” and this evolving technology in some instances precludes reticent individuals from being open to it because they assume it will change soon. Therefore, pessimism prohibits them from being receptive to any change.

C2AC discusses buy-in related to assessment indicators and how active participation from individuals is likely to yield acceptance to the resulting changes. Referring to the EAS, “I think it is a mechanism to assist with change,” C2AC notes. “Change happens all the time, and I really believe that it is part of the assessment system, but it is a very dynamic part of the system. So, I see it as a way to facilitate change.”
“Certainly technology always presents a challenge, and there have been some challenges in trying to monitor how we use the assessment system,” C2F1 states. Continuing, this faculty member describes how that “monitoring” includes gauging buy-in through utilization of the EAS. Thus, the monitoring informs future utilization initiatives and practices. C2F1 believes that change is good, and acceptance to change is imperative or “at least that’s how it should be.” Contingent upon implementation, though, C2F1 notes, is participant buy-in. Without buy-in, implementation efforts are futile.

“A disadvantage is that when we first started, there were issues that had to be ironed out,” and early adoption was tempered by that. C2F2 uses this example to discuss how acceptance or resistance is determined by the EAS’s functionality. “The disadvantage is that when it doesn’t work, it’s a bad thing.” Unreliable technology, C2F2 feels, results in resistance because confidence in the technology is jeopardized.

Beyond the issues with technology, C2F2 identifies that the EAS presents issues unique to EASs—issues related to assessment and technology like collecting data and recording field experiences. “It wasn’t the use of the technology; it was the use of the electronic assessment system.” Regardless, “people are forced to change in order to be able to use it,” so acceptance is always a challenge, whether it is voluntary or involuntary.

Like other participants, C2F3 and C3F3 comment on the importance of buy-in from users. C3F3 feels that a significant challenge is “buy-in for the skeptics among us who otherwise just don’t like change,” and what C2F3 believes promotes buy-in is that an EAS allows assessment to be “more comprehensive, much more timely.”

C3AC discusses how “technology can be tricky sometimes,” and that affects acceptance of or resistance to the EAS because some individuals may resist the technology regardless of its value to assessment. This participant continues that “you not only have those technology
challenges but just the challenge, the people challenge, and making sure that everybody is comfortable with what they’re doing. That they’re able to use it.” Stressing the importance of buy-in, C3AC remarks that “if there’s one person that’s really being relied upon to do all that, that becomes a challenge for that one person.” Thus, C3AC identifies that the workload and work setting’s climate are two variables that affect buy-in.

C3AC discusses how an EAS can change practices once acceptance is secured, but acceptance can be secured only after individuals see a value in the EAS. This, it is posited, is the challenge, but “everybody needs to assess their programs, their candidates, and this is the way—through this electronic means—that I really see it facilitating the whole process.”

C3F1 identifies confidence as a prominent factor that contributes to buy-in. This faculty member believes that “a challenge is to make sure that the students understand that when they put something in the assessment system, it’s going to be available into perpetuity and then something happen and that data goes away, then they loose confidence in it.”

C3F2 uses a personal example to qualify remarks about EAS acceptance. “Just learning the system was the biggest challenge for me. I was hesitant to make a change, but I am seeing it has been beneficial.” Sometimes, that hesitancy is addressed with pressure. “Some faculty members must be forced to change. They must be forced to embrace technology.” C3F2 summarizes how resistance is addressed. “They’d say things like, ‘That’s not anywhere in my job description.’ Well, yes, it is. It comes in that little last sentence about ‘any other duties.’”

Teacher flexibility

Several participants discuss the issues of standardization brought about by some assessment measures. In many instances, they feel as though standardization in assessment jeopardizes teacher flexibility. That flexibility refers to the autonomy of a teacher to customize his or her courses to suit the needs of a class. While some participants feel it is positive, it
challenges the culture of change and presents a challenge to individuals associated with the change.

Through casual discussion, C1F2 does not express opposition to or support for standardization but rather a rationale for it. “It does make coherence. It brings us together in a coherent manner, so everybody’s not just collecting your own data in your own way. It’s uniform. It’s standardized,” and it provides standardization in course-based assignments.

C2AC describes the dilemma of standardizing assessment and its effect on faculty with respect to identifying signature assessments per course.

Sometimes agreeing on the indicators needing to be assessed is a point of negotiation or a series of negotiations, and that can be a real challenge. Let’s say for example if we determine that we’re going to put as assessment in a particular course; we’ve eliminated that flexibility from the instructor to make their own assessment for that course. Now, certainly, we want them to do their own things as well, but there are several courses that we’ve mandated a signature assessment that would be in every section of each course for assessment purposes.

While this scenario compromises teacher autonomy, it still allows for course customization. However, those customizations are not permitted to the extent that signature assessments for the course are neglected.

Standardization is a concern for C3F1. “We end up standardizing a lot of things, which ensures consistency across programs.” Even though this participant speaks of the advantage of consistency in standardization:

it also to a certain extent, I think, limits the instructor’s ability to customize a course to include emerging trends in the field. Sometimes being so very standardized can be constricting, and I think each candidate could certainly benefit from each instructor modifying instruction to what emerges in the class.

For C3F1, “instruction” refers to all course elements including course content, instruction, and assessment.
C3F3 discusses issues of standardization and worries about excessive standardization. “I guess some people would think that standardization is a positive effect because we’ve got the same instruments in place. [However,] I’m not a believer in total standardization.”

Why do all of our signature pieces have to be exactly alike? I see this as another step toward standardizing everything, which I know, here again, this is balance, [but] I don’t want to be locked into an instrument or a system that I can’t individualize for my students. So, I think that might in some cases be negative.

2B: Training

Training is a challenge presented by a majority of participants. In most cases, the participants correlate adequate EAS training with increased EAS adoption. “Hopefully,” C1AC remarks, “the faculty will be trained enough so [that] the faculty are in there teaching the students how to do it.” C1AC continues to discuss the significance of training and how it can dictate an EAS’s success or failure. “In the past, I remember going to some sessions, and everything [the EAS] could do was pitched to the faculty,” and those types of sessions yield adverse effects on faculty accepting the EAS.

There were faculty in there that’ll use one tenth of what was presented to them. Well, you know, present the one tenth. Don’t present them the whole thing. They’re going to leave intimidated and disgusted and [say], “I’m not doing that.”

Thus, simplifying and streamlining are two challenges that C1AC proposes. Essentially, this participant feels that overwhelming faculty with all the “bells and whistles” will not yield the desired adoption results.

For C1F2, “the biggest challenge is teaching everyone how to use it” and discusses how “it’s a trade-off” because no EAS will have all features or accomplish all tasks to every person’s satisfaction. Therefore, a second challenge for this faculty member is addressing the fact that not everyone will be satisfied completely regardless of what the EAS can or cannot do.
C2F2 remembers how “we had to have a significant amount of training with faculty and with students, and it’s like anything else. You can train somebody for something, but if they don’t use it right then, then the training was for naught.” For some individuals, “when it got time to use it, [they] had forgotten how to do all that” was expected of them, and those “who got trained and did not use it” had to be re-trained.

Adequate and ongoing training is recommended by C2F3 because “you’ll have the basic run of people trying to figure out how to use it and the learning curve that occurs in putting information into an electronic assessment system. For some people, that curve is a lot steeper than for others,” and that is congruent with C3AC’s belief that one of the most significant challenges is “learning the system and what it can and cannot do.”

C3F2 agrees. “The training of students and faculty” is noted as a challenge. “The fact that you go to a system at all and you have to get students and faculty members where they are functional within the system and how it works” presents a significant challenge, especially for faculty who are trying to learn how to use the EAS and teach their students how to use it simultaneously. C3F2 pauses then recounts a recent experience where students in one course volunteered to help their peers upload artifacts to the EAS and remembers how “we’ve had quite a bit of difficulty even though we’ve had training.”

We had a tutoring session after class one night, and I asked my students who had been successful in getting their [documents] uploaded to stay after and help those of us who were more technologically challenged, and they rose to my challenge. They stayed, and by the end of the class meeting, I think we had everyone’s [documents] up. So, once we get this instruction going, once they’re comfortable with the system, it’ll be fine.

C3F2 expresses concern, however, over how complicated accomplishing that might be because students’ “initial feedback was all negative.”

Training is one of C3F3’s challenges as well. “We have to be trained,” noting that “the initial work of developing all these pieces” and learning the EAS are challenging. C3F3 takes
some time to reflect on preparing to implement the EAS within courses. “I’ve spent hours in just the two or three courses I’ve done, [and] I’m the steward for several more that are in the process.” The discussion reveals that some faculty are “stewarding” their colleagues, learning the EAS, and augmenting their courses for the EAS in tandem.

Summary of the Thematic Analysis

The two themes presented here—advantages and challenges—are substantiated by participants’ perceptions of how those themes related to EASs. Careful and repeated data analysis reveals sub-themes that are presented to delineate the two themes. While it is likely that repeated analysis would yield the emergence of further themes or the refinement of those presented, the researcher feels as though these themes reflect the breadth of the data accurately and with appropriate detail to address the study’s research questions.

Cross-case analysis data reveal two significant sub-themes that prevail over others because all 12 participants discuss those to some length. Decision-making, classified within Data Management and Utilization, and Acceptance and Resistance, classified within Change, are issues upon which all participants comment at length, and in some instances, data from multiple participants are correlated. Other thematic details presented in this chapter hold significance because they emerged within each case study; however, only these two sub-themes are represented by each participant within each case, which warrants highlighting them.

Summary of the Analysis of Patterns in Participants’ Perceptions

Introduction

The data analysis conducted in this study was grounded in a case study approach. Each case presented a portrayal of one university’s teacher education programs through the perceptions of four individuals associated with the programs. Conducting further analysis, the researcher identified emergent themes that were common to the three case studies. Essentially,
the analysis’s scope was broad, focusing on a case as one unit of analysis rather than each individual within a case as one unit of analysis.

A second option for data analysis is to examine each participant—rather than each case—as a unit of analysis and construct comparisons among the three assessment coordinators and the three faculty within each of the three strata employed in the participant sampling. A cursory analysis of that type was conducted on the three case studies. Described in the following paragraphs is a summary of that analysis within the context of the interview protocol categories presented in each case study.

Assessment Coordinators

Due to their roles in Professional Education Units, assessment coordinators seem to be the individuals mostly closely associated with EASs. The assessment coordinators in this study all identify EASs as tools they use to fulfill their duties. Each of the three assessment coordinators discuss at length their perceptions of EASs as related to the seven categories of perceptions presented in the case studies. In most instances, their comments regarding those categories vary. This is not alarming for the reason that each university is different, has different needs, and utilizes EASs in different manners. What is a challenge at one university may not be an issue at another university. Despite that, comparing the assessment coordinators’ responses within the seven categories of perceptions did reveal common patterns of perceptions in four of the seven categories. Those patterns are presented in Table 5.1.

Table 5.1 Patterns in Assessment Coordinators’ Perceptions

<table>
<thead>
<tr>
<th>Perception Category</th>
<th>Pattern Description</th>
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<tbody>
<tr>
<td>Negative Effects and Challenges</td>
<td>The process of soliciting buy-in from individuals is challenging and a lack of adequate buy-in presents the potential for underutilization and other negative effects.</td>
</tr>
</tbody>
</table>

(Table 5.1 continued)
### Features, Elements, and Tools

Electronic data collection tools are valued for the efficiency and ease-of-use they provide.

### Assessment Opportunities

EASs increase the efficiency of all assessment practices, which allows time and resources to be devoted to enhanced assessment measures.

### Decision-Making Contributions

The decision-making process is enhanced and expedited efficiency with the assistance of an EAS and the data management tools embedded within it.

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**Faculty**

The collective role that faculty members play in assessment is crucial. In some instances, the data collected for assessment purposes is collected from the faculty; in other instances, data is collected from students, and faculty are held accountable for students’ reporting data. This integral role of faculty warrants a comparison of their perceptions.

In this study, faculty were classified into one of three strata: Innovator (Level 1), Adopter (Level 2), or Novice (Level 3). The responses of each faculty member in each of the three strata were compared to identify areas of consensus. The researcher found that faculty participants’ perceptions were concurred in a total of four of the six interview protocol categories presented in Chapter 4’s case studies.

Surprisingly, the category of “Instructional Roles” was one of the two were no consensus was noted. The researcher found this staggering because the instructional uses of an EAS were expected to be those of the most substance for faculty. It is noteworthy, though, that the absence of a consensus does not reflect that an EAS’s role in instruction is insignificant; it reflects simply that each faculty member has unique methods for using an EAS in instruction.

Tables 5.2, 5.3, and 5.4 present the patterns of consensus in faculty perceptions by stratum.
**Table 5.2 Patterns in Innovator (Level 1) Faculty Members’ Perceptions**

<table>
<thead>
<tr>
<th>Perception Category</th>
<th>Pattern Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Features, Elements, and Tools</td>
<td>Candidates’ capabilities to submit artifacts electronically, either through electronic portfolios or independently, provide candidates and faculty with a method to integrate technology into courses.</td>
</tr>
<tr>
<td>Forces of Change and Change Agents</td>
<td>An EAS forces change and can be an impetus for change within an organization. That change is intended to be positive and allow the organization to advance.</td>
</tr>
</tbody>
</table>

**Table 5.3 Patterns in Adopter (Level 2) Faculty Members’ Perceptions**

<table>
<thead>
<tr>
<th>Perception Category</th>
<th>Pattern Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative Effects and Challenges</td>
<td>The transition from one EAS to another is challenging, and training users is one of the greatest challenges in that transition.</td>
</tr>
<tr>
<td>Electronic Assessment Systems and NCATE</td>
<td>NCATE’s Standards require technology-mediated data management, and an EAS provides a mechanism for addressing that requirement while providing tools for efficient data management.</td>
</tr>
<tr>
<td>Forces of Change and Change Agents</td>
<td>The new technology introduced by an EAS forces faculty members to reevaluate their current practices and make deliberate modifications for improvement.</td>
</tr>
</tbody>
</table>

(Table 5.3 continued)

**Table 5.4 Patterns in Novice (Level 3) Faculty Members’ Perceptions**

<table>
<thead>
<tr>
<th>Perception Category</th>
<th>Pattern Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Negative Effects and Challenges</td>
<td>Training users during the transition from one EAS to another is a significant challenge.</td>
</tr>
<tr>
<td>Forces of Change and Change Agents</td>
<td>The introduction of an EAS into an organization introduces change within that organization. Furthermore, it has the potential to force change and be a force of change for potential users.</td>
</tr>
</tbody>
</table>
CHAPTER 6
DISCUSSION AND CONCLUSIONS

Introduction

This qualitative study explored the perceptions of assessment coordinators and faculty members in teacher education programs at three universities selected through stratified random sampling. The participants’ perceptions regarding electronic assessment systems (EASs) were investigated to determine what factors and processes influenced the diffusion of EASs in teacher education programs. In the two preceding chapters, the results of the study were presented through three qualitative case studies and a cross-case thematic analysis. The researcher’s intention was to present the findings in comprehensive portraits of each case in Chapter 4 then identify and substantiate common themes across all three cases in Chapter 5. This chapter offers (1) a discussion of the findings and their relationships to the literature and (2) implications, recommendations, and conclusions regarding the study.

Findings

Described here are critical issues that lend credence to the parallels drawn between the findings and the relevant literature. They also provide rationales for the contributions to the existing knowledge that the researcher proposes. Here, the study’s four significant findings are presented in response to the research questions guiding the study, and the following discussion depicts a synthesis of the relationship between the findings and the relevant literature.

- **NCATE and Technology**: NCATE’s advocating the strong presence of technology, especially in terms of assessment and reporting, substantiates participants’ perceptions that EASs hold significant roles in teacher education programs.
• **Change and Individuals**: The issue of change is critical in innovation diffusion with technology because of individuals’ attitudinal factors regarding technology integration.

• **Innovation Diffusion and Individuals**: Satisfactory diffusion of an innovation requires adequate preparation, planning, and implementation that reflect the participation of individuals.

• **Standardization and Teacher Flexibility**: Increased standardization in assessment compromises teacher flexibility.

Three of the four findings reveal strong relationships between the data and the literature cogent to this study that is grounded in scholarly writing addressing change, NCATE accreditation, innovation diffusion, and technology integration. The final finding, Standardization and Teacher Flexibility, reveals a gap in the study’s relevant literature when the theoretical foundations are situated within a teacher education context.

**Discussion**

The following discussion highlights relationships between the cross-case thematic analysis results and the frameworks, theories, and conceptual writings of the literature. Furthermore, it presents a discussion describing the issue of teacher flexibility that is absent from this study’s relevant literature. The discussion presents four critical issues that illustrate this study’s significant conclusions as they relate to the thematic analysis results.

Those issues are presented in four sections: (1) NCATE and Technology, (2) Change and Individuals, (3) Innovation Diffusion and Individuals, and (4) Standardization and Teacher Flexibility.
NCATE and Technology

Professional Education Units within higher education institutions pursuing NCATE accreditation or the reaffirmation of NCATE accreditation are expected to demonstrate that “educational and information technology are integrated throughout the curriculum, instruction, field experiences, clinical practice, assessments, and evaluations” (NCATE, 2006, p. 13). Further, Units are expected to identify how their assessment systems are maintained “through the use of information technologies” (NCATE, 2006, p. 22) because “technology will play an increasingly important role in data gathering and analysis, as well as more broadly in unit planning and evaluation” (NCATE, 2006, p. 23). This impetus validates the strong technology presence in teacher education programs reflected in this study’s findings.

Data reveal that participants perceive the presence of an EAS as paramount in satisfying NCATE accreditation requirements. While an EAS is a specific technology designed for assessment purposes, it is, nevertheless, technology. Participants use terms like “necessary,” “vital,” and “required” when referencing an EAS; however, these comments rarely relate to an EAS outside the context of assessment required for NCATE accreditation. This poses the question of whether an EAS is truly diffused within teacher education programs per Rogers’ (2003) model, where an innovation is expected to provide substantial contributions to an organization and become a part of the organizational culture. It seems as though EASs referenced in these findings are regarded as requirements of NCATE accreditation but may not hold significance in teacher education programs without the NCATE expectation.

Further, this finding is significant because it raises the issue of what, specifically, assessment coordinators and faculty find valuable about the EAS. Is it the EAS and its commercially constructed, electronic assessment tools, or is it the technology that provides functionality to those tools? Essentially, do the interface and the environment enhance the
tools—or the perceptions of the tools—embedded within a commercial EAS, or do they
disguise the general technology powering the tools? For example, an EAS may feature a
repository of field experience data that permits a user to sort and filter that data per his or her
needs. This is a standard feature of electronic spreadsheet and database applications. Therefore,
if a participant identifies that feature as a significant EAS feature, what he or she finds
significant is a standard function of computerized data management applications. It is not a
feature unique to EASs, so does the EAS obscure the participant’s perspective of the feature he
or she finds significant?

It also raises the question of whether the opportunities provided by commercial EASs
equal those provided by locally-developed EASs. In other words, is a commercial EAS, as
represented in Cases 2 and 3, necessary to address assessment needs or would readily available
productivity software applications like spreadsheets and databases, as represented in Case 1, be
adequate? In general, data demonstrate perceptions of value regarding technology that is
embedded within an EAS—data in only two cases being technology embedded within a
commercial EAS. The researcher poses the following analogy to describe this phenomenon:

Imagine two individuals traveling toward the same destination. One individual chooses
to travel a toll-road because that is the route with the heaviest traffic, which leads the
individual to conclude that it is the most expeditious route simply because “everybody”
is going that way. The other individual chooses to travel a less well-known route
without a toll. In the end, both travelers arrive at the same destination having traveled
relatively equal distances and times. The primary difference is that one traveler chose to
pay for the route, and the other chose to explore an alternative, cost-free route that
yielded the same result.

Such is the situation with EASs. Some institutions may choose to contract commercial
EASs and incur considerable costs. Other institutions may choose to explore alternative,
locally-based EAS options with significant cost savings even though encumbering the task of
developing an EAS may be challenging. Essentially, as presented by this study’s findings, all
institutions will achieve the same goals as long as the EAS—commercial or non-commercial—is adopted and utilized effectively.

**Change and Individuals**

Data illustrate that technology presents a challenge that is coupled with change in some instances; however, that illustration is isolated from this finding between change and individuals because it warrants separate attention in this study and was presented in the NCATE and Technology finding. Thus, this discussion focuses on individuals’ attitudinal factors affecting change.

Gill & Griffith (2004) and Reigeluth (1993) report that schools are in ongoing transitions, working to meet society’s expectations of education, and the nature of transition is change. Ongoing transition implies ongoing change, and such circumstances create situations that may overwhelm and discourage participants. Data analyzed in this study concur that participants are sometimes beset by change, and their reactions reflect the change process and how it is introduced into the organization. Essentially, their remarks amplify the literature by indicating that buy-in from individuals is significant in the process (Gill & Griffith, 2004; “Learning to Lead Change,” 2004; Rogers, 2003).

Some participants note initial resistance to adopting an EAS because that adoption would require a transition, a change, from former practices to whatever new practices the EAS would avail to them. They discuss the evolution from resistance to initial, cautious acceptance whether voluntary or due to pressure from colleagues, administrators, or students. These discussions support the propositions of “Learning to Lead Change” (2004). In that report, eight elements of change are defined as key drivers in the change process. Two of those, engaging peoples’ moral purposes and capacity-building, are supported by data in this study.
First, engaging participants’ moral purposes potentially may elicit greater buy-in (i.e., acceptance) from them. It facilitates their receptiveness to the change process at hand. It does not guarantee that they will embrace the change, though. It simply provides them the opportunities to contribute to the decisions involved in the change, and Fullan (1993) and Rogers (2003) discuss the importance of involving individuals in the change process. These contribute to the second element, capacity-building, because one may speculate that garnering support for a process contributes to driving the process. Those propositions complement the “Learning to Lead Change” (2004) ideas and are amplified by participants in this study by participants’ noting that feeling as though their opinions are valued encourages their acceptance and support of change.

Innovation Diffusion and Individuals

Rogers (2003) defines that innovation diffusion is a process by which a new innovation, a process, a tool, etc., is introduced and implemented in an organization’s culture. Hannan (2005) denotes that an “innovation is often seen in terms of technological change” (p. 975), and often, education is a discipline where new technologies are tested. Data reveal that an EAS is one such innovation, and the innovation diffusion framework is regarded as the most appropriate for technology adoption in higher education (Medlin, 2001; Parisot, 1995).

Numerous empirical studies employ the innovation diffusion framework in diverse contexts. Through these applications, eight conditions emerge as foundational to an innovation diffusion initiative (Allison & Scott, 1998; Ely, 1999; Miller, et al., 2000; Sherry, et al., 2000; Surry & Ely, 2002). In this study, the data identify two of those eight as critical: participation and commitment. Participation and commitment refer to the outward, active advocacy for an innovation and individuals’ dedication to its success, respectively. While these two conditions
are associated with eight significant foundational factors in innovation diffusion, they correlate with those of change that are also significant in this study.

The findings of this study mirror the empirical research findings in Rogers’ *Diffusion of Innovations* (2003). One common finding among this study and Rogers’ (2003) work is that the diffusion of an innovation within an organization sometimes must occur before that innovation is adopted by organizational members. Rogers (2003) presents four types of innovation decisions associated with organizations and that adoption. The two most relevant to these findings are collective decisions and authority decisions.

Collective decisions result from a majority consensus among organizational members regarding the decision to adopt an innovation; authority decisions are those top-down decisions where administrators choose to adopt an innovation. In both instances, organizational members are expected to adhere to that decision. In these findings, data reveal that EAS adoption decisions would fall between the two decisions if they were placed on a continuum.

Participants in each case identify that some input was solicited from selected individuals in regard to EAS adoption, but no participant described a random selection process by which those individuals were chosen. From their comments, it appears as though participants were selected purposefully by the Unit leadership because of their roles within the Unit or other unknown criteria. While Rogers (2003) suggests that all individuals be active in the process, involving some individuals has the potential to be more productive than disregarding everyone. This presents a decision in each case that does not adhere fully to either definition for collective or authority decisions. As a result of this study, the researcher proposes a new dimension of a collective decision and distinguishes that dimension as a *confirming collective decision*.

Contributing to and expanding the existing research on innovation diffusion, the researcher defines a *confirming collective decision* as one where the adoption decision is made
by administrative individuals but where selected subordinate individuals make contributions, and those individuals become early adopters (Rogers, 2003) and advocates of the decision. In return, these individuals provide some confirmation to others that the decision made is appropriate and is in the best interest of the organization and its members, reflecting capacity-building, commitment, and participation, and working to engage participants’ values toward the innovation. Such is the situation represented in this study’s findings; therefore, while the findings support Rogers’ (2003) work to an extent, they serve to apply empirical, contextual findings to elaborate upon prior innovation diffusion research. To date, no prior research on EASs within the context of the innovation diffusion framework exists.

**Standardization and Teacher Flexibility**

A finding of this study that is significant but is not represented in the literature relevant to the study relates to standardization and teacher flexibility. Data demonstrate significant concern with standardization of assessment practices and how that standardization jeopardizes teacher flexibility. Thirty percent of participants, mostly faculty participants, acknowledge the era of accountability in education and make some attributions for standardization to that; however, the accountability does not seem to provide adequate credence to elicit participants’ support.

This finding also presents an issue that reveals a dichotomy in the findings. Primarily, faculty participants express concern over assessment standardization. Contrastingly, assessment coordinator participants seem to support it. For faculty, it compromises their flexibility to customize courses; for assessment coordinators, it provides common, standardized, if you will, grounds for data analysis and evaluation, which aids the facilitation of assessment processes.

In the context of teacher education, the researcher proposes an expansion of Rogers’ (2003) model of the innovation diffusion process in organizations. The model (see
Figure 6.1) identifies five stages of innovation diffusion within an organization, and each stage is categorized into one of two dimensions: initiation or implementation. For this context, the researcher’s proposition is that the issue of teacher flexibility be integrated into matching, the second stage (Rogers, 2003). According to Rogers (2003), the matching stage is where “fitting a problem from the organization’s agenda [from the initial stage] with an innovation” (p. 421) occurs. The matching stage concludes the initiation dimension and is followed by the adoption decision. Thus, considering all potential issues is pertinent at this point. It is a point that follows the organization’s identifying a need but precedes the decision to adopt a specific innovation. In essence, it is regarded as the “research” or “exploration” stage where all possibilities are deliberated.

![Innovation Process in Organizations (Rogers, 2003, p. 421)](image)

For educators, the possibility of restricting the capacity to customize and refine a course as they deem appropriate may pose significant influence over their decisions to support or resist the initiative. Therefore, the issue of teacher flexibility in the adoption of an innovation is critical, and disregarding it compromises the integrity of an innovation diffusion initiative.
Implications of the Study

The conclusions of the study identify two contributions to the existing knowledge of the theoretical frameworks presented. First, the researcher introduces the *confirming collective decision* within the innovation diffusion process in organizations as presented in the Innovation Diffusion and Individuals discussion. Second, a rationale for addressing teacher flexibility in the innovation diffusion process when it occurs in an educational environment is posed in the Standardization and Teacher Flexibility discussion. These two contributions are presented to (1) address a gap in the relevant literature and (2) apply a significant finding of a theoretical framework in a new context, respectively, in accordance with American Educational Research Association guidelines for social science research.

Innovation diffusion studies are not restricted to technology-related phenomena. As noted in the literature, an innovation can be tangible or intangible. A process can be an innovation if it is a plausible solution to an organization’s efforts to diagnose and address a problem. This study’s scope, however, does involve a technological innovation. Specifically, it involves a technology innovation in teacher education, and the conclusions presented here are offered with the intention that they will inform future, related studies on considerations that are not present in the literature.

Recommendations for Best Practices

Previously noted in this chapter are the researcher’s four significant findings of the study. Reflecting on those and applying those in practical contexts, the researcher presents these three recommendations for best practices in adopting and implementing EASs in teacher education programs.
Recommendation 1: Commercial versus Non-commercial EAS

As presented in this study’s findings, the effects of an EAS must be considered within the context of an institution’s teacher education programs. Individuals exploring EASs for teacher education programs are encouraged to explore both commercial and non-commercial options. The researcher does not recommend wholeheartedly either type of system. The recommendation is that institutions explore both options and select the type of EAS that is most suited for the context in which it will be used. The researcher’s fundamental recommendation is that institutions explore both commercial and non-commercial options and examine which type of system is most practical, most feasible, and most beneficial to the teacher education programs within which it will be implemented.

Recommendation 2: Participation

Involving people in the decision-making process is paramount to the decision’s effect. Often, the adoption of a new innovation results from an administrative decision. In some instances, input from others is solicited, but this is not the case in every situation. The researcher recommends that the individuals who will be expected to utilize the EAS (or any innovation) be involved in the decision-making process. Essentially, the “voice” of those individuals who will implement the EAS should be heard.

Participants want to be consulted, and they express greater interest and demonstrate greater support for decisions when they are involved in the decision-making process. While this involvement does not guarantee unfettered acceptance of the decision, it demonstrates the organizational administration’s willingness to involve others in decision-making, and in some instances, the expression of that willingness is sufficient to garner support.
Recommendation 3: Teacher Flexibility

Individuals may recognize the adoption of an EAS as an attempt to standardize assessment practices. Assessment coordinators concur with this assumption, and standardizing assessment across multiple teacher education programs allows for efficient analysis of each program and comparable comparisons of multiple programs. Faculty, however, may be reticent to such standardization because it has the potential to impose on their capabilities to customize their courses; it impedes their academic freedom to some extent.

Standardization, as one participant in this study notes, can be constricting. It can be confining. It can compromise the ownership that a faculty member has over his or her course. This is a concern of faculty that must be addressed in the selection and adoption of an EAS. Pursuant to Recommendation 2, greater involvement from faculty could subdue this issue because the faculty involved would have a forum to express their concerns and have those concerns addressed during the decision-making process rather than after the decision is made.

The issue of standardization is not one that can be eliminated from imposing standard assessment measures with an EAS. However, it is an issue that can be confronted early in the EAS selection process, and compromises that are suitable to the majority of participants could be negotiated early in that process. The essential issue is to find “common ground” where an institution can maintain (1) the integrity of program assessment through standardization and (2) the flexibility provided to faculty to augment the content of their courses as they deem necessary.

Recommendations for Further Research

The researcher sought to use the findings of this study to enhance the innovation diffusion framework’s empirical knowledge base, and that goal is reflected in this work. However, through that process, areas emerged where further study is warranted.
Recommendation 1: EAS Comparisons

This study focuses on participants’ perceptions of EASs in teacher education programs. Its approach is general to an extent. Further study in EAS comparisons would provide for a more robust comparison than what is presented here and would present a researcher the opportunity to construct more detailed conclusions. The perspectives presented here are significant, and applying them within the scope of a study intended to compare specific elements, features, and tools of EASs would yield a knowledge base to inform future EAS adoption decisions. Beyond that, it is recommended that further study address support measures for all EAS users.

Recommendation 2: Expanded Sample

This study sets forth a framework for examining EASs with considerable guidance from Rogers’ (2003) work. By expanding upon that framework, a comparative study of cases with larger sample sizes that examines commercial EASs and locally-developed EASs would be an appropriate follow-up study. Such a study should involve administrators, faculty, and students so that all users’ perspectives are reflected.

Recommendation 3: Mixed Methodology

The researcher concurs with Meyer (2004) that mixed methods studies in innovation diffusion are substantial. In innovation diffusion contexts, employing quantitative methods in order to capture all individuals’ input is important, and coupling that with qualitative methods (e.g., interviews, observations, and artifact analyses) helps to present the most comprehensive findings. Reporting comprehensive findings is significant to all empirical studies, especially when those findings are considered in larger-scaled decisions, and findings such as those would provide robust results for consideration in EAS adoption decisions.
Conclusion

What should the reader glean from this dissertation? Essentially, the reader should discover that the presence of EASs in teacher education programs is significant. The significance varies within the three cases presented in this study. Participants within each case discuss different features, elements, and tools of EASs and how those contribute to their work in preparing teacher education candidates to fulfill the roles of in-service teachers, and many participants note the relationship of that utilization to NCATE expectations.

NCATE mandates that institutions demonstrate strong relationships between instructional and information technologies and the preparation of teacher education candidates (NCATE, 2006). NCATE’s insistence on evident technology use in teacher education programs is growing, and integrating an EAS in teacher education programs is one method of addressing this mandate.

This study reveals several issues and considerations related to EAS diffusion in teacher education programs as identified by the individuals most closely associated with the diffusion—faculty and assessment coordinators. It reveals their perceptions. It presents their “voices.” It is significant because it allows the reader to delve into what the participants believe and how they feel about a technological innovation impacting their work. Research on EASs must be situated around the effects of EASs on people—faculty, assessment coordinators, students, stakeholders, and others in education. Regardless of what innovation is in question, be it technological or not, its impact will be exposed through the individuals who utilize it. In this study, the researcher sought to present the perceptions of those individuals in order for their voices to be heard.
REFERENCES


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APPENDIX A

INTERVIEW PROTOCOL: ASSESSMENT COORDINATORS
Assessment Coordinators

1. Describe technology’s role in your work.
2. Discuss the positive effects that you believe a university’s electronic assessment system (EAS) can have on teacher education programs.
3. Discuss the negative effects that you believe a university’s EAS can have on teacher education programs.
4. Describe the advantages of using an EAS.
5. Describe the challenges of using an EAS.
6. Discuss what you believe a university’s EAS allows an assessment coordinator to do what would not have been possible otherwise.
7. Describe how you believe an EAS contributes to decision-making (candidate, program, unit, etc.).
8. Describe the features or elements (e.g., evaluation instruments, survey tools, demographic data options, etc.) of an EAS that you feel are most valuable. Explain each factor or element and its value.
9. Discuss your overall impression of an EAS and its effect on the NCATE accreditation process.
10. Do you view an EAS as a force of change? Explain your response.
APPENDIX B

INTERVIEW PROTOCOL: FACULTY
Faculty

1. Describe technology’s role in your work.
2. Discuss the positive effects that you believe a university’s electronic assessment system (EAS) can have on teacher education programs.
3. Discuss the negative effects that you believe a university’s EAS can have on teacher education programs.
4. Describe the advantages of using an EAS.
5. Describe the challenges of using an EAS.
6. Discuss the role an EAS can play in a faculty member’s work and how it can be used to enhance his or her work.
7. Describe the features or elements (e.g., evaluation instruments, survey tools, demographic data options, etc.) of an EAS that you feel are most valuable. Explain each factor or element and its value.
8. Discuss your overall impression of an EAS and its effect on the NCATE accreditation process.
APPENDIX C

PARTICIPANT REQUEST TO PARTICIPATE LETTER
Dear _____,

My name is Dustin Hebert, and I am a member of the teacher education faculty at McNeese State University and a doctoral candidate in educational leadership and research at Louisiana State University. Currently, I am working to initiate my dissertation study, which focuses on the effects of electronic assessment systems (EASs) in teacher education programs as perceived by faculty, assessment coordinators, and EAS coordinators. Through a random sampling process, you were selected as a potential participant in the study, and your participation would be appreciated greatly.

The study is qualitative in nature, employing a case study design involving three cases. In this study, each case represents one randomly selected college or school of education in a postsecondary setting. Data collection for each case will be conducted through personal interviews with four individuals per case.

Should you agree to participate in the study, I would conduct an interview with you regarding how you perceive an EAS can affect (e.g., enhance, challenge, etc.) teacher education programs. To maintain your and your institution’s anonymity, no specific questions related to your background, your institution, or the EAS your institution uses will be included.

A protocol test (i.e., pilot study) was conducted, and the interviews conducted ranged between 30 and 50 minutes. I expect the forthcoming interviews’ durations to be fairly equivalent.

Each participant will be provided with an electronic copy of the interview protocol no less than 48 hours prior to the interview to permit him or her to become familiar with the topics to be discussed during the interview. Once the interview concludes, I will provide each participant with an electronic transcript of the interview. Each participant will be asked to review the transcript and clarify, amend, or elaborate upon any responses he or she feels are ambiguous, incorrect, or vague. I suspect that this review would take no longer than 30 minutes, depending upon the extent of revisions each participant chooses to make. Thus, your participation in the study would require 1.5 to 2 hours of your time—roughly one hour for the interview and 30 minutes for the transcript review.

I would like to expedite the study efficiently, conducting the interviews before the end of the spring 2007 semester if possible. Please contact me by e-mail at dhebert@mcneese.edu or telephone at [number] or [number] if you would like to participate in the study or have any questions.

Thank you for your time and consideration. I hope to hear from you soon.

Sincerely,
Dustin Hebert
APPENDIX D

RESEARCH STUDY CONSENT FORM
The Role of an Electronic Assessment System as a Change Agent in Teacher Education: Perspectives of Faculty and Assessment Coordinators

Dustin M. Hebert
Doctoral Candidate
Department of Educational Theory, Policy, and Practice
Louisiana State University and Agricultural and Mechanical College
dhebe19@lsu.edu

CONSENT FORM

Purpose of the Study: This purpose of this study is to examine the factors and processes that affect the implementation of electronic assessment systems in teacher education programs.

Study Procedures: This study will be conducted through personal interviews with four individuals from three institutions that grant undergraduate degrees in teacher education.

Risks: This study poses no risks to individuals who choose to participate in it.

Right to Refuse: Participation in this study is voluntary, and participants have the right to participate in or withdraw from the study at any time without penalty of any kind.

Privacy: Results of the study may be published; however, the anonymity of participants and the institutions they represent will be maintained. No data disclosed in the study results will permit individuals or institutions to be identified.

Signatures: The study has been discussed with me, and I fully understand my duties and rights as they relate to this study. I understand that I may direct any questions regarding this study to the researcher or the faculty member directing the study, Dr. Janice Hinson at jhinson@lsu.edu. I further understand that I may direct questions regarding my rights in this study to the Institutional Review Board chairperson, Dr. Robert C. Mathews at 225.578.8692.

I agree to participate in the study described above and acknowledge the researcher’s obligation to provide me with a signed copy of this consent form.

_______________________________________________
Signature of Participant                                  Date
APPENDIX E

INSTITUTIONAL REVIEW BOARD APPROVED APPLICATION FOR EXEMPTION
APPLICATION FOR EXEMPTION FROM INSTITUTIONAL OVERSIGHT

Unless they are qualified as meeting the specific criteria for exemption from Institutional Review Board (IRB) oversight, ALL LSU research/projects using living humans as subjects, or samples or data obtained from humans, directly or indirectly, with or without their consent, must be approved or exempted in advance by the LSU IRB. This Form helps the PI determine if a project may be exempted, and is used to request an exemption.

Instructions: Complete this form.

Exemption Applicant: If it appears that your study qualifies for exemption send:

(A) Two copies of this completed form,
(B) a brief project description (adequate to evaluate risks to subjects and to explain your responses to Parts A & B),
(C) copies of all instruments to be used. If this proposal is part of a grant proposal include a copy of the proposal and all recruitment material.
(D) the consent form that you will use in the study. A Waiver of Written Informed Consent is attached and must be completed only if you do not intend to have a signed consent form.
(E) Certificate of Completion of Human Subjects Protection Training for all personnel involved in the project (including students who are involved with testing or handling data) at http://cmr.cancer.gov/clinicaltrials/learning/humanparticipant-protocuts.asp. (Unless already on file with the IRB.)

to: ONE screening committee member (listed at the end of this form) in the most closely related department/discipline or to IRB office.

If exemption seems likely, submit it. If not, submit regular IRB application. Help is available from Dr. Robert Mathews, 578-8692, irb@lsu.edu or any screening committee member.

Principal Investigator: Dustin M. Hebert
Student? Y
Ph: 337-515-3101 E-mail: dheber@lsu.edu Dept/Unit: ETP/College of Education

If Student, name supervising professor: Dr. Janice Hinson
Ph: 225-578-2280
Mailing Address: 223 Peabody Hall, LSU, Baton Rouge, LA 70803

Project Title: The Role of an Electronic Assessment System as a Change Agent in Teacher Education

Agency expected to fund project: University employees

Circle any "vulnerable populations" to be used: (children <18; the mentally impaired, pregnant women, the aged, other). Projects with incarcerated persons cannot be exempted.

I certify my responses are accurate and complete. If the project scope or design is later changed I will resubmit for review. I will obtain written approval from the Authorized Representative of all non-LSU institutions in which the study is conducted.

PI Signature: Dustin M. Hebert
Date: 1/8/07 (no per signatures)

Screening Committee Action: Exempted V Not Exempted ___ Category/Paragraph ___

Reviewer: S. Kim
Signature: S. Kim
Date: 1/11/07

Study exempted by
Louisiana State University
Institutional Review Board
203 B-1 David Boyd Hall
225-578-8692
Robert C. Mathews, Chair
APPENDIX F

THEMATIC ANALYSIS MATRIX
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VITA

Dustin Michael Hebert is the son of Donna and Dwight Hebert of Evangeline, Louisiana. He attended Evangeline Elementary School, a K-8 campus at the time, where his interest in teaching was sparked. He graduated from Iota High School (IHS) in 1997 and began his pursuit of a bachelor’s degree in business education at Louisiana State University at Eunice (LSUE) that same year. Later, he transferred to McNeese State University (MSU) to earn the degree.

His career began at Crowley High School, where he taught business, publications, and social studies courses, while initiating his pursuit of a master’s degree in educational technology and taking courses toward school counselor certification simultaneously. While pursing that degree, he accepted an instructional position at LSUE and later assumed the role of electronic learning coordinator. Following the encouragement of colleagues at LSUE, he enrolled in the doctoral program at Louisiana State University. His career eventually led him back to MSU as a faculty member within the Burton College of Education. At the time the doctorate was conferred, Dustin was still a faculty member at MSU doing the work he enjoys most—teaching.