Integrating New Technologies Into the Methods of Education (INTIME): Its impact on the professional practice of participating teacher educators

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INTEGRATING NEW TECHNOLOGIES INTO THE METHODS OF EDUCATION
(Intime): Its Impact on the Professional Practice of Participating Teacher Educators

A Dissertation Submitted
In Partial Fulfillment
of the Requirements for the Degree
Doctor of Education

Approved:

Dr. William Callahan, Committee Chair

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December 2002
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(INTIME): ITS IMPACT ON THE PROFESSIONAL PRACTICE OF
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ABSTRACT

The purpose of this qualitative study is to determine those factors that influenced the implementation of a technology-based project (Integrating New Technologies Into Methods of Education [INTIME]) as well as its overall impact on the professional practice of participating methods professors who used it in their classroom over a number of semesters.

Recent research findings reveal the fact that teacher preparation programs lack the proper use of computer technology (CT). In this light, it would be expected that in-service teachers who have recently graduated college do not master the necessary technological skills to educate their own students for a prospective life in a technology-driven society.

Under these circumstances, methods professors from the five participating universities were selected to modify their courses as to implement the INTIME project and its supporting theoretical model (Technology as a Facilitator of Quality Education [TFQE]). The latter places students at the center of their own learning in a robust educational environment characterized by a flexible blend of various factors that define quality education: student learning, information processing, content and standards, democracy, technology, and teacher knowledge and behavior. Therefore, any example of teaching practice could be interpreted through the various lenses represented by the foregoing model components.

The participating methods professors chose to change their syllabi to incorporate specific CT applications created and promoted by the INTIME project. In this light, they
had to consider certain instructional strategies that would be supportive of the new technology-enhanced environment. This particular selection process relied on field-related knowledge as well as on attitudes toward the use of CT applications in general and in college classrooms in particular.

The main focus of the researcher was to assess the impact of INTIME on the professional practice of the participating faculty members, based on their self-reflections on the project-induced change process. The approach in determining what worked and what could be improved in their continued use of this particular CT applications in college classrooms was designed to group in-depth interviews findings in terms of facilitators and hindering factors in the implementation of the INTIME online video vignettes.

Inductive data analysis revealed that the most frequent hindrances in implementing INTIME in college methods classes were technical problems, time demands, and scheduling. The main facilitating factors that rendered the whole INTIME experience beneficial were the rich content and versatile format of the project-created Web site. In other words, while the former provided its users with a rich collection of online video vignettes featuring classroom teachers at all grade levels and in all content areas, the latter accommodated the different learning styles of the users. Therefore, in most cases, INTIME proved to be a valuable resource that could meet the various learning needs and interests of the audiences.
Overall, the impact of the project on the professional practice of the participants translated into increased awareness and knowledge of the various instructional technologies as well as of ways to incorporate them into the classroom.
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CHAPTER I

INTRODUCTION

One of the defining traits of today's society is the increasing dependency on computer technology (CT). Its remarkable effects on all aspects of economic and social life allowed individuals from all corners of the world to be able to have access and transmit information at unimaginable speed. Thus inter-relating users create a virtual network that introduces our society to the near future. One of the many outcomes that theorists have noted is the shift from individual communities to "the global village" where geographical limits are nothing else but a mere convention.

Historically, formal transmission of knowledge has followed a well-defined linear and unidirectional pattern from teacher to student (Bransford, 1986). Therefore, it was the teacher who managed the pace and amount of information that would be disseminated among students who would be therefore perceived as a unit taken through the gradual stages of learning. Lecturing was the main method of imparting knowledge. This kind of static transfer of knowledge encouraged passive learning, as students were simply exposed to the information presented by the teacher who acted as the only recipient of knowledge in the classroom. Consequently, all instructional planning processes were geared toward fortifying the "omniscient" role of the teacher in the classroom.

In recent years, new research has documented how knowledge is acquired, thus prompting new thinking movements concerning instruction and learning (Johnson & Kuntz, 1992; Reid & Stone, 1991). In the same line of thought, Tyack and Cuban (1995)
claim that CT appears to have had the most powerful impact of all newly developed teaching tools.

Software represents the core of what is considered computer-based instruction. New learning units/programs have been developed as a direct result of the infusion of CT into the structure of schooling as an illustration of the substantial impact educational software has had upon instruction. Out of the wide range of computer software applications (databases, graphics, spreadsheets, word processing programs, etc.), "computer-assisted learning" (CAL) is specifically designed for academic purposes. CAL involves three primary approaches: computer-assisted instruction (CAI), computer-managed instruction (CMI), and computer-enriched instruction (CEI; Niemiec & Walberg, 1987).

Examples of CAI include drill and practice, tutorial, and demonstration activities (Wood, 1998). Considering the fact that such computer applications enhance instruction by ensuring increased retention of information, their large-scale use makes CAI one of the most popular approaches.

CMI is another type of learning assisted by computer. In this particular case, the computer manages various files electronically. The curriculum is task-oriented and mastery of content is the emphasis of instruction. Students have to pass a reference-based test to move to the next predetermined level/unit of instruction. Under these circumstances, the computer stores test scores based on which students determine the subsequent stages in the process of mastery learning (Niemiec & Walberg, 1987).
A third primary CAL approach is CEI, whose focus is on the use of simulation and instructional games to enhance learning. In simulations, students have to solve real-life problems that require the use of previous skills. In turn, students can use their prior factual and procedural knowledge to achieve mastery learning or automaticity by means of instructional games whose focus is on practice sessions (Niemiec & Walberg, 1987).

Some of the benefits of CAL upon student performance include varied ways to produce and share information, meeting individual needs by means of individualized instruction—branching, pacing, prompting, and immediate feedback (Boettcher, 1983; Woodward & Gersten, 1992).

For the past years, CT has noted outstanding progress whose impact on teaching and learning is very important. The prominence of the Internet opened up possibilities for distance learning, presentation software, hypertext applications, multimedia presentations, CD-ROMs, DVDs, digital cameras, video production software, web design software that are some of the examples of the latest applications of CT in education. Given the circumstances, the emerging patterns of adopting/adapting new instructional technologies have made university administrators prompt their faculty to integrate technology into their professional practice. Understanding which factors would promote faculty use of CT in teaching is a requirement of our society's continued embracing and integrating technology into our lives.

Boettcher (1983) and Woodward and Gersten (1992) point out certain prerequisites to using CT appropriately. First, educators should display an increasing knowledge of how to design media-enhanced lessons. Second, they should attempt at all
times to match the wide range of instructional applications of CT with the various needs of a diverse student population. In turn, this constant awareness of what learners need and how their academic interests could be satisfied via technology implies a strong commitment to stay abreast of new relevant CT applications. Finally, college professors, specifically methods instructors, should expose their teacher candidates to instructional opportunities focusing on possible ways to use technology.

Under these circumstances, the INTIME Project (Integrating New Technologies Into Methods of Education), a Catalyst Grant to the University of Northern Iowa's College of Education from the U.S. Department of Education, represented a relevant CT application intended to address the needs of teacher educators and their pre-service teachers taking methods classes. The three-year INTIME project addressed deficiencies in teacher education programs in preparing preservice teachers to use technology effectively in the PreK-12 classroom. The purpose of INTIME was to provide the necessary resources for methods faculty to revise their courses, model technology integration, and require preservice teachers to integrate technology, along with components of quality education, in their lessons and units. A consortium of five participating Renaissance Group universities came together in this project to create new learning resources and implement new standards for technology integration in preservice teacher preparation.

This project was intended to produce change in teacher education programs in three ways. First, the project generated new learning resources on the Web to support new teaching and learning processes in education methods courses. The new learning
resources included video scenarios of PreK-12 teachers effectively integrating technology, along with components of quality education, in a variety of grade levels and content areas. These videos were stored on a video server already in place at the University of Northern Iowa and made accessible online nationwide.

Second, methods faculty revised their courses to model technology integration using the video scenarios and online discussion forum, required students to apply technology, and implemented the Preservice Teacher Technology Competencies as exit criteria for their courses. Finally, methods faculty shared strategies for integrating technology and course revisions with other faculty involved in the grant through the Faculty Online Discussion Forum and nationwide through print and Web publications of their findings as well as presentations at national conferences.

Statement of the Problem

The problem this study focused upon was determining those factors that influence the implementation of a technology-based project (Integrating New Technologies Into Methods of Education [INTIME]) as well as its overall impact on the professional practice of participating methods professors who used it in their classrooms over a number of semesters.

Recent studies (e.g., Office of Technology Assessment & National Council for Accreditation of Teacher Education reports released in 1995 and 1997, respectively) show that first-year teachers do not quite master specific skills that would allow them to use instructional technology in their classroom. Probing into the possible reasons for this state of affairs, researchers found out that these new in-service teachers did not have
enough exposure to various kinds of technological resources while in their teacher preparation programs. Therefore, one recurring suggestion made by researchers focuses on the fact that college methods professors should model more often the use of such instructional technologies that their students could in turn employ when they go out into the field.

Under these circumstances, the INTIME project was intended to bridge this gap by creating and providing online resources that teacher educators could use with their students in an attempt to increase awareness in terms of how to utilize such tools in the classroom.

**Statement of Need**

Recently, computer technology and its varied educational applications have shaped, or at least changed significantly, our perception of schooling, teaching, and learning. Yet, there are diverging opinions regarding the impact of information technologies on education, ranging from considering them a major prompting factor with beneficial effects on our students to a similar prevalent force that would ruin schooling as we know it (Callahan & Switzer, 2001).

Reports from the National Council for Accreditation of Teacher Education (NCATE) and the Office of Technology Assessment (OTA) have pointed out one troubling fact whose effect on the appropriate preparation of our students for their prospective professional life is yet hard to predict. The existing deficiencies in teacher education programs in preparing pre-service teachers to use technology effectively in the pre-K-12 classrooms pose the questions of how effective they can be in their modeling
the use of such CT applications to their future students. NCATE’s report *Technology and the New Professional Teacher* (1997) recommends that pre-service teachers be introduced to different CT applications in their courses. At the same time, university methods professors should model the use of technology in their classroom as a way to prompt students to adopt and expand the use of educational technology in their instruction. Once faculty members have become more knowledgeable in terms of what technological resources they could use to enhance student learning, their students will be more likely to incorporate similar resources in their practice once they go out in the field.

Given the importance and requirements for using CT applications in instruction will likely increase in the future, current information is needed to identify emerging patterns and various factors that promote or dissuade the use of educational technology.

Under such circumstances, the INTIME project was designed to correct the existing deficiencies in teacher preparation programs related to the effective use of technology in the classroom, as identified by OTA. The online resources created by the project aim at encouraging the participating methods professors to model their use as a way to empower pre-service teachers in developing their own repertoire of technological skills and tools. Depending on the focus of the classes taught by these faculty members, technology integration should result in increased awareness of CT applications and comfort in employing them both on the part of the methods professors and their students.

Complementing the formative and summative evaluation efforts included in the project grant proposal, this study aimed at investigating the utility of the project by involving a group of INTIME methods professors at the five participating universities.
These faculty members were asked to reflect on how the project affected their professional practice, in an attempt to locate facilitators as well as hindrances in using INTIME in the college classroom. Results and findings could be used to add to the knowledge base about the use of technology in university educator preparation programs.

Purpose of the Study

This study investigated the impact of the INTIME project on the professional practice of participating university methods professors related to the use and modeling of computer technology applications in instruction. In their classrooms, these faculty members used the INTIME online video vignettes to demonstrate possible ways to employ technology in pre-K-12 classrooms. One of the main purposes of the INTIME project was to create and provide online resources designed to prompt methods faculty to revise their courses, model technology integration, and require pre-service teachers to accommodate technology into their lessons and units. Based on modeling and critiquing of educational technology applications featured in the INTIME online video vignettes, methods professors, as well as their preservice students, improved their technological skills. As a result, faculty showed increased awareness of available technologies and ways to incorporate them in the classroom as well as a positive evolution in their comfort related to the role of CT in instruction.

The researcher capitalized on this specific shift, as shown by graphs of specific data collected over the duration of the project, to devise a set of in-depth interviewing sessions designed to assess the facilitators and hindrances in the use of the INTIME online resources in the classroom. The graphs mentioned earlier are part of the pre-
interpretation procedural stage of analyzing the Stages of Concern Questionnaire (SoCQ) (Hall, George, & Rutherford, 1979) that indicate the familiarity and comfort that faculty display in using an instructional innovation such as INTIME. It also should be noted that the analysis of the SoCQ data is a part of the process of formally assessing the effectiveness of the INTIME project.

**Research Questions**

Taking into account the current findings surrounding faculty use of computer technology in higher education, the research problem focused on the influence of the INTIME project on the professional practice of a group of participating faculty who volunteered to share their insights with the researcher related to the use of project-developed online resources in college methods classes.

The main focus took into account all aspects related to the use of the INTIME project in the methods classes that these faculty members taught for at least one semester. These aspects dealt with faculty perceptions and attitudes toward the use of INTIME in the classroom, as well as with change in teaching methods, as reflected in the revised syllabi submitted by these professors. It should also be noted that the research question was grounded in the researcher's personal experience with the INTIME project. Therefore, the research questions that this study tried to answer to are as follows:

1. What are the problems encountered in implementing INTIME?
2. What are the facilitators in implementing INTIME?
3. What are the primary changes in professional practice noted as a result of using INTIME in the college methods class?
The following is the set of preliminary questions that the INTIME participating faculty members were asked:

1. For how many semesters have you been using the INTIME project in your methods classes?
2. Are you currently using the INTIME project?
3. If the answer to the question above is no, please provide a reason.
4. Did you have to change your initial plan related to the number of semesters you thought you would use INTIME in your classroom?

In order to gain insight on the overall research question, the following statements were addressed in a first set of phone interviews in an attempt to guide the subjects through the process of probing into assessing their individual experiences in the college methods classroom featuring INTIME. Starting from more factual information, these statements prompted the faculty to voice their opinions related to what they considered worked or did not work, for that matter, in implementing the project.

1. Describe your teaching practice before implementing INTIME into your classroom. Also mention for how many semesters you used the project in your classroom.
2. Describe your teaching practice now that you have been using the INTIME project in your classroom for [the given number of] semester(s).
3. Share some of the transitions/adjustments to your teaching practice you had to make to accommodate the INTIME project into the methods classes you taught.
4. Describe some of the problems you encountered during the implementation of the INTIME project into your methods classes.

5. Share some of the achievements that you noticed as a result of using INTIME (both on your part as a methods professor as well as on the part of your students).

6. In case you collected formal or informal evidence of improved student learning as a result of using INTIME in the classroom, share some of the information.

A separate set of questions and statements, also included in the first interview, made reference to issues related to the evolution of the project-related concerns that the participants may have (see Appendix D, Set II of Interview Questions). These concerns were assessed by means of a formal instrument provided by the Concerns-Based Adoption Model (Hall et al., 1979). The instrument in question is called the Stages of Concern Questionnaire and references to it were made in the following script used by the researcher at the end of the first interviewing session:

Thus far we have collected ... sets of Stages of Concern Questionnaire that you completed since the beginning of the project. I would like you to share with me the perception of how your concerns related to your use of the INTIME Project changed over time. Therefore, I will mention each of the seven different concern stages by briefly defining them, as stated by the authors of the instrument. In case you have anything to comment on in relation to the particular stage of concern, please feel free to do so. However, if there is nothing you would have to say at this moment, please say so and we will move right along.

1. The first stage, awareness, focuses on your concern about or involvement with the innovation. By the way, from now on, by innovation I mean the INTIME Project.

2. The second stage, informational, relates to the general awareness of the innovation and interest in learning more about it. Under these circumstances, at any given time, did you feel that you had been provided with enough
information about the INTIME Project or you wished you knew more about it?

3. The third stage of concern on the questionnaire, personal, takes into account the role and demands the innovation (the INTIME Project) entails. In other words, how did you feel while using INTIME in the classroom: comfortable, not sure what to do, etc.

4. The next stage focuses on any management issues that you may have had to solve during the implementation of INTIME. Could you elaborate on the topic?

5. The next stage of concern deals with the impact of the innovation, that is the INTIME Project, on your students. Were your ever concerned about it? If so, did your concern change over time?

6. Have you been able to collaborate in using and possibly disseminating the INTIME Project?

7. Finally, based on your use of the project, were you able to come up with alternatives to the existing form of the innovation?

A subsequent set of questions and statements relied on the transcription of the material recorded during the first interview (see Appendix D, Set III of Interview Questions). The connections between the two sets emphasized the researcher's attempt to encourage the participants to probe more in-depth into their own experiences in college methods classrooms featuring INTIME:

1. What do you think you could have done differently to improve student learning even better?

2. What do you think INTIME could have done differently to make your use of it even better?

3. Please share something about the background of your students in an attempt to assess how INTIME met their various learning needs.
4. Thinking comparatively before INTIME and after INTIME, what do you think would be the major achievement/change in terms of your professional practice?

5. If you were given the decisional power to continue the project or replicate it under comparable circumstances, how would you go about it? Would you change anything? Would you keep it as it is? Would you have a different target audience in mind?

6. Under these circumstances, based on all that you have shared with me, how would you present/describe INTIME in a few words?

Hypothesis

While, of course, no formal hypothesis was generated, this study was guided by a number of possible expectations. Based on the implementation of the INTIME online video vignettes at the five participating universities over the first two and a half years of the project, the researcher had taken into account the different formal and informal assessment tools designed to determine the effectiveness of the project. Therefore, trying to complement that set of measures of efficiency, the researcher came up with the foregoing set of issues meant to investigate the shift in professional practice on the part of the participating faculty members who used the INTIME online resources in their classes that were an integral part of different teacher education programs at their respective universities. The underlying hypothesis relied on the fact that the INTIME project was initially designed to bridge a gap between the actual and desired technology proficiency levels of pre-service teachers. Therefore, the project would be beneficial both for
participating pre-service teachers and for methods faculty by providing them with online examples of sound practice assisted by computer technology.

**Results and Expected Benefits**

Taking into account the expected potential of computer technology applications in education, particularly in higher education, it is quite desirable to investigate the current use of CT in an attempt to predict future trends, identify facilitating factors and hindrances in implementation as well as point out the impact of such CT applications on the professional practice of educators using them.

This study contributes to the development of an emerging information baseline regarding the use of CT applications in teacher preparation programs, as exemplified by the INTIME project. The participating faculty's personal success or failure stories pointed out the shift, or lack thereof, in the professional practice as a direct or indirect result of the use of CT in their classes. In turn, once a shift in professional practice was noted, it provided the researcher with appropriate insights into the effectiveness of the INTIME project, and thus of the use of instructional technology in higher education.

**Significance of the Study**

Considering some of the conclusions drawn by the Office of Technology Assessment (OTA) in 1995, it has been noted that faculty members are more likely to discuss technology with their colleagues, or initiate classroom conversations, rather than model its appropriate use or prompt students to incorporate it into their own lessons and units. Under these circumstances, the INTIME (Integrating New Technologies Into Methods of Education) Project represented an attempt to correct these deficiencies in
teacher preparation programs. By means of their involvement in the implementation of INTIME online resources into their courses, the participating faculty members showed a constructive disposition toward acquiring and practicing new cognitive and procedural knowledge related to the use of computer technology applications in college classrooms. Moreover, such a constructive disposition could be related to the selection of particular teaching strategies and materials as well as to different roles that the faculty members have to play in the college classroom.

Therefore, the results of this study could be of interest to teacher educators that are assessing their current use of CT applications and investigate possible expansions. In addition, this study could contribute to the ongoing efforts to determine current and predict future trends in CT applications use in college classrooms. Assuming that the INTIME project would be continued by the current five participating universities or replicated by other institutions of higher education, findings of this study could provide useful information related to the facilitating factors and impediments related to implementation. However, if such a replication were to become reality, it would have to be done under circumstances comparable to those at the five participating universities, so that expected outcomes could be quantified based, in part, on factors that have been identified as influencing the implementation process.

Definition of Terms

For purposes of clarity, the study utilized specific definitions of the following terms that are related to the content and structure of the INTIME project:
1. **Computer-assisted instruction**: "Instruction delivered directly to learners by allowing them to interact with lessons programmed into the computer system" (Heinich, Molenda, Russell, & Smaldino, 1999, p. 402).

2. **Computer-controlled adaptive strategy**: "An instructional procedure used by a computer program that determines the number, type, and sequence of instructional events to be presented to learners according to a set of sophisticated decision rules based on instructional theory" (Merrill et al., 1996, p. 363).

3. **Computer-managed instruction**: "The use of the computer to manage the instructional process, including maintaining student records, controlling the availability and timing of instructional events, and providing progress reports to instructors, students, parents, and administrators" (Merrill et al., 1996, p. 363).

4. **Educational Technology** (also known as "instructional technology"): "a systemic process involving application of knowledge in search for replicable solutions to problems inherent in teaching and learning; products of this process" (Hackbarth, 1996, p. 354).

5. **Hyperlearning**: "A set of new technologies that connect knowledge, experience, and media to increase learning" (Heinich et al., 1999, p. 405).

6. **Hyperlink**: "A highlighted graphic such as a button or illustration, or piece of text that connects a user to another web site or source of information or file on the Internet" (Provenzo, Brett, & McClosky, 1999, p. 283).
7. **Hypermedia**: “Any combination of text, sound, and motion pictures included in an interactive format on the computer. It is an extension of hypertext emphasizing audio and visual elements” (Provenzo et al., 1999, p. 283).

8. **Hypertext**: “A model for presenting info in which text becomes linked in ways that allow readers to browse and discover the connections between different sets of information” (Provenzo et al., 1999, p. 283).

9. **Real time processing**: “Computer processing that relies on almost instantaneous input of data from external (real world) sources to control subsequent processing” (Poole, 1995, p. 443).

10. **Streaming**: “The real-time delivery of multimedia presentations in small ‘bursts’ using a program such as RealMedia” (Kearsley, 2000, p. 194).

11. **Technology**: “(1) A process of devising reliable and repeatable solutions to tasks. (2) The hardware and software (i.e., the product) that result from the application of technological processes. (3) A mix of process and product, used in instances where the context refers to the combination of technological processes and resultant products or where the process is inseparable from the product” (Heinich et al., 1999, p. 410).

12. **Technology for learning**: “An application of technology to aid the learning process; may refer to either ‘hard’ technologies (communications media) or ‘soft’ technologies (processes or procedures that follow a technological approach)” (Heinich et al., 1999, p. 410).

CHAPTER II
REVIEW OF THE LITERATURE

This chapter presents a literature review of the evolution of the use of computer technology (CT) applications in college classrooms. The summary of current research in the field is intended to provide an overview of research on the use of CT applications by professors in general teacher preparation programs and its effectiveness related to students' academic achievement levels. In addition, this literature review will include reference to some of the previous reports on research regarding the use of CT by college faculty and factors that promote or discourage such use. Moreover, the chapter will examine the theoretical underpinnings concerning faculty use of CT applications in instruction in higher education.

Evolution of Computer Technology (CT)

Several studies on the use of computer technology (CT) focused on the type of devices used in general education. Bork (1995) reported that general education students used primarily the following CT applications that have been described as computer-assisted learning (CAL): calculators, computer-assisted learning, distance education, DVDs and CD-ROMs, and presentation software. The main four settings where these instructional CT applications were used are as follows: the classroom, the computer lab with teacher supervision, the computer lab with computer specialist and teacher cooperation, and the computer lab with computer specialist supervision.

Taking into account the substantial impact of CT upon learning and schooling in general, a number of recent studies focused on the relationships between CT and
academic achievement from the early 1980s to the mid-1990s (Bork, 1995). The subjects of these studies were grouped in the following categories: disabled and non-disabled students (selected separately) in PreK-12 classes, and college students. All of these studies consistently show that the impact of CT upon the academic achievement of students of all ages is positive, yet non-significant. Therefore it could be concluded that instructional applications of CT have produced only low to moderate effects on academic growth of students in general education classes. There is some evidence in the data collected and interpreted as a result of these studies that younger learners tend to benefit the most from being exposed to CT, while college students get much less out of their instructional opportunities involving CT. Such outcomes are not likely to motivate teachers and teacher educators to expand the use of CT in their professional practices.

**Use of Computer Technology in Higher Education**

As far as higher education is concerned, administration has been the domain to benefit the most from technology-assisted data management. Anyone affiliated with almost every American campus would have to rely on technology for admission, registration, student and personnel management, budgeting, student and library services, as well as instructional technology services for students, faculty and staff. In making a comparison between the degree to which technology is implemented in higher education and industry, Green and Gilbert (1995) refer to the various cycles that define the adoption process, such as planning and experimentation (Stage 0), capital investment (Stage 1), readjustment and evaluation (Stage 2), and full implementation and emergence of the new organization (Stage 3). Higher education institutions as organizational and
administrative structures could use some of the viable models of technology adoption that have been validated in industry. Therefore, universities were able to engage fairly quickly in this technology adoption process. In contrast, the instructional component of higher education is much more autonomous at the micro-level, therefore a lot less structured and centralized. As a result, since there is no counterpart in the industry world, the process of infusing CT applications into teaching and learning at the university level has been rather slow and unsteady. Studies assessing the evolution of CT use in college classrooms pointed out that by the mid 1990s higher education institutions seemed to have reached a plateau somewhere between Stage 0 and Stage 1 (Green & Gilbert, 1995; Greene, 1991).

Despite findings that reveal a slow implementation process, stakeholders and educators strongly believe in the role technology has to play in adapting teaching and learning to the requirements of our digital age society. In this light, Geoghegan (1996) emphasizes the fact that this fata morgana-like reflection of "pedagogical utopia" has somehow failed to come to fruition due to various contextual reasons that make it difficult to pin down.

Familiar boundaries and categories in our academic landscape may already be changing. Potentially, information technology may not only permit us to change our current practices and systems, but it may also push us and enable us to change the whole enterprise of teaching and learning. (Batson & Bass, 1996, p. 44)

Taking into account past predictions that failed repeatedly to materialize, current expectations acknowledge the numerous and complex issues that must be addressed in order for the instructional implementation cycle to move beyond Stage 1. Some of the
aforementioned issues include the resistance to change that educational institutions have shown traditionally, the pending issues of the magnitude and significance of the impact of CT applications upon teaching and learning, the digital divide and its implications under current tight budgetary circumstances, time allotment that faculty have to ensure to stay abreast of new technological innovations and their applications to education, the lack of appropriate campus-wide technology infrastructure and technical support, etc. (Gilbert, 1995; Green & Gilbert, 1995; Kemp & McBeath, 1994; Kershaw, 1996; Saettler, 1990).

Once again, in spite of evidence that points to a slow pace of the technology-adoption process, realizing that CT applications have been increasingly affecting instruction in an evolutionary manner could guide stakeholders in education in making appropriate decisions.

If it takes 40 or 50 years, can we still call it a revolution? The media have been carrying stories about the ways computer and video technology will revolutionize education during ‘the next few months” – for 30 years. They are still wrong, but they become less so with each decade. (Gilbert, 1995, p. 6)

Geoghegan (1996) suggests that unrealistic expectations related to implementing/adopting/adapting any given new CT application can hinder the process of integrating it in teaching and learning. Moreover, considering the time-span that any such new technology has, shorter with any updated generation of products, then implementers/users of CT applications to education have to adjust their expectations of how much “on the technological edge” they would be.

Rogers (1995) and Moore (1991) analyzed the adoption patterns for instructional technology in higher education. Rogers’ diffusion theory tackles the patterns displayed by various socially-located groups as they attempt integrating technology into their
professional practice. According to his theory, the prior knowledge and existing professional beliefs of the individual group members impact the technology adoption process. In addition, other factors that influence how much and how soon a technological innovation is implemented include the technical and administrative support that is to form a social network. Rogers (1995) proposes an s-shaped diffusion curve that would determine three individual stages in the process of implementing the innovation: (a) a slow, tentative initial rate of adoption, (b) a "take-off" period, and (c) a final plateau.

Addressing the issue of differences in joining the adoption process, Rogers points out the varying socio-psychological contexts that prompt individuals to be more or less receptive to the innovation. Moreover, these contexts, combined with the prior knowledge of what the innovation may represent, affect the attitudes/behaviors these individuals develop toward the innovation. In other words, the technology adoption process may be facilitated or hindered by the degree to which the participating individuals are willing to respond constructively to the challenges/changes posed by the innovation. In addition, due to the different times individuals enter the adoption process, there is an expected inter-group effect in the sense that while early initiators model the adoption, those who follow may choose to replicate the process or to tackle it completely different, in a very personalized manner.

Keeping in mind the s-shaped curve representing the continuum of any given innovation adoption process, Rogers identifies five categories of participants in the process: innovators, early adopters, early majority, late majority, and laggards. The onset of the s-shaped diffusion curve is short and rising only slightly. This is the domain of
innovators. Once the innovation has been adopted by about 15% of the population – representing the upturn of the curve – the critical mass point is reached. Rogers defines critical mass as "the point at which enough individuals have adopted an innovation so that the innovation's further rate of adoption becomes self-sustaining" (p. 313). This is the point where "innovators" and "early adopters" are joined by the "early majority." The s-curve displays a sharp upward turn beyond the critical mass point, thus indicating the swift adoption of the innovation by the "early majority" (35% of the population). Infusion begins to slow down when over 50% of the population is penetrated. At this point into the adoption process, the "late majority" (35% of the population) joins in. Finally, the "laggards" (the last 15% of the population) bring the diffusion to a very slow pace. Thus the "laggards" represent the horizontal tail of the s-curve (Rogers, 1995).

Geoghegan (1996) applies Rogers' diffusion theory to higher education as follows:

- **Innovators**: the "techies" who represent about 3% of the faculty. Their involvement in experimenting with new technology stems from a certain degree of comfort and prior specialized knowledge that allow them to investigate it. However, it should be noted that these "techies" adopt the innovation more out of excitement than a well-informed solution to problems in instruction or research. They form small highly "techno-knowledgeable" communities across campuses that often have close links to commercial developers of technology.

- **Early adopters**: also considered "visionaries" or "risk-takers," they show an equal interest both in technology and in its potential to enhance instruction or research. Representing about 12% of the faculty, these individuals are also knowledgeable in the technical aspects of the innovation. It is quite likely that these adopters have strong connections with the innovators.

- **Early majority**: in their case, the shift in focus is obvious toward relevant applications of the new technology to instruction and research. Whereas the first two groups are more experimental, early majority adopters (35% of the faculty members) are rather pragmatic in their decision making process that has to rely on compelling evidence.
of effective implementation of the technology. Another important difference between early majority and the previous two groups is the fact that the former tend to be discipline-driven. Therefore, they prefer a gradual integration of the innovation into their existing research and instructional methods.

- **Late majority**: while similar to the previous group in terms of size and outlook, the main difference between the two is that late majority adopters tend not to be that well-informed in terms of specific technical aspects of the innovation. In turn, this affects their disposition toward experimenting with possible ways to integrate the new technology. Consequently, these individuals prefer pre-packaged innovations that have proven to be effective.

- **Laggards**: they are the faculty (the remaining 15% of the population) who resist the integration of the innovation by anyone due to various reasons.

In assessing the potential for success or failure of any given innovation, Geoghegan (1996) also emphasizes the dynamics of the adoption process as it involves more and more individuals. However, one of the very important transition points along the way is that between the early adopters and the early majority. The timing and degree to which early majority join the adoption process determines whether or not the whole innovation will succeed or fail.

One of the reasons identified by Geoghegan (1996) for the failure of instructional technology to appeal more to the mainstream faculty is their alienation by the early majority in terms of guidance and support through the adoption process. In other words, the lack of an articulate discourse that would present the mainstream faculty with reasons for implementing the new technology seriously impacts any attempt to diffuse the innovation.

**The Concerns-Based Adoption Model (CBAM)**

Hall et al. (1979) provide an articulate viewpoint in analyzing the process of innovation adoption from an individual perspective. CBAM was initially put together by
Hall, Loucks and their colleagues at the Texas Research and Development Center, relying on Frances Fuller's earlier work (1969) that examined the evolution of teacher preparation-related concerns of preservice teachers.

The basic assumptions of CBAM are grounded in Maslow's hierarchy of needs. Briefly, these assumptions relate to the fact that all change requires time, as it is achieved in sequential stages, while the main focus of the change process is represented by individuals/participants. Therefore, all the various stages of the change process could be tied with the evolution of concerns that these participants may have with regard to a given innovation and its implementation.

CBAM operates on the hypothesis that innovation adopters pass through seven different sequential stages that initially focus on the individual and later connect him/her with the larger context in which the innovation is being implemented. Therefore, the seven different stages of concern could be grouped into three broad categories. Stage 0 (awareness), Stage 1 (informational), and Stage 2 (personal) emphasize the possible concerns innovation users may have related to their knowledge and understanding of the innovation as well as to the amount of information they are provided with so that their role in the implementation process is clear. Stages 3 (management) and 4 (consequence) point out the potential concerns innovation users may have with regard to implementing the innovation and the impact it may have on users themselves. The last two stages, 5 (collaboration) and 6 (refocusing), take into account a desired shift toward optimization of the innovation by assessing the concerns that users have that could enable them to identify alternate ways to disseminate and implement the innovation.
An analysis of the patterns in the evolution of innovation-related concerns from non-user to experienced user reveals a decrease in the scores for the first 4 stages, while the last three stages demonstrate a proportional increase that could be linked with enhanced comfort with the innovation (see Appendix A).

**National Guidelines in Implementing Computer Technology in Instruction**

The United States Department of Education Goals 2000: Educate America Act (National Education Goals, 1996) suggested six national education goals that are referred to commonly as Goals 2000. Developed by leaders from all 50 states and Congress, these goals suggest that:

1. All students will display a readiness to learn;
2. The high school graduation rate will be at least 90%;
3. All students will be competent in core academic subjects;
4. U.S. students will be first in the world in math and science;
5. All adults will be literate and skilled;
6. Every school will be free of drugs and violence;


The National Council for Accreditation of Teacher Education (NCATE, 1997) has issued standards of accreditation for colleges and schools of education. Other educational organizations, such as the International Society for Technology in Education (ISTE), are developing standards for teacher education majors. Educational technology has become one of the competency themes identified by these organizations.
Recent research shows some progress in terms of technology integration into teacher education programs. A measure of their effectiveness is directly linked to the proof of changes in the impact of such programs on classroom teachers. As Tapscott (1998) puts it, effective teacher education programs prepare individuals to integrate technology in the curriculum and serve as information facilitators rather than deliverers of knowledge. Many teachers have worked hard to be more than just transmitters of information, measurers of retention, and judges of performance.

The INTIME Project

INTIME (Integrating New Technologies Into the Methods of Education) was a Catalyst Grant to the University of Northern Iowa's College of Education from the U.S. Department of Education. The three-year INTIME project addressed deficiencies in teacher education programs in preparing preservice teachers to use technology effectively in the PreK-12 classroom. The purpose of INTIME was to provide the necessary resources for methods faculty to revise their courses, model technology integration, and require preservice teachers to integrate technology, along with components of quality education, in their lessons and units. A consortium of five participating Renaissance Group universities came together in this project to create new learning resources and implement new standards for technology integration in preservice teacher preparation.

This project was intended to produce change in teacher education programs in three ways. First, the project generated new learning resources on the Web to support new teaching and learning processes in education methods courses. New learning resources included video scenarios of PreK-12 teachers effectively integrating...
technology, along with components of quality education, in a variety of grade levels and content areas. These videos were stored on a video server already in place at the University of Northern Iowa and made accessible online nationwide.

Second, methods faculty revised their courses to model technology integration using the video scenarios and online discussion forum, required students to apply technology, and implemented the Preservice Teacher Technology Competencies as exit criteria for their courses. Finally, methods faculty shared strategies for integrating technology and course revisions with other faculty involved in the grant through the Faculty Online Discussion Forum and nationwide through print and Web publications of their findings as well as presentations at national conferences.

The six major goals of the project, as listed in the project grant proposal, were as follows:

1. Each Renaissance university participating in the grant would ensure that faculty have access to adequate resources that support the integration of technology into methods courses.

2. Each participating university would provide one-on-one technical support to those faculty members who were revising their courses to integrate technology.

3. Methods faculty members would participate in faculty development programs to revise their methods courses to incorporate new learning resources and new standards.

4. New learning resources would be developed and implemented, along with new standards, into methods courses.
5. Methods faculty would participate in networked learning communities at the project website.

6. A professional evaluation team would assess the overall effects of the project on teaching and learning.

**Expected Use of INTIME by Participating Faculty**

As specified in the Catalyst Grant Application proposal, the INTIME project design listed a number of goals and indicators that refer to the participating faculty, as follows:

- Methods faculty members would participate in faculty development programs to revise their methods course to incorporate new learning resources and new standards.

- Methods faculty would participate in a 3-day training conference about issues of technology integration.

- Methods faculty would be satisfied with the training.

- Methods faculty would access project-created supporting training materials.

- Methods faculty would learn strategies for integrating technology in their classes.

- New learning resources would be developed and implemented, along with new standards, into methods courses.

- Methods faculty would revise their courses to model implementation of best teaching practice with technology by incorporating online video best practice scenarios showing P-12 teachers integrating technology, along with other components of quality education, in a variety of grade levels and content areas.

- Methods faculty would model technology integration using the online discussion forum to engage preservice teachers in reflection and discussion about the video scenarios with the P-12 teachers in the videos, preservice teachers and methods faculty and students and their partner P-12 teachers.
• Methods faculty would utilize the Technology As Facilitator of Quality Education Matrix (see Appendix F) with preservice teachers to analyze the video scenarios.

• Methods students would utilize the Technology As Facilitator of Quality Education Matrix (see Appendix F) as a guide to incorporate technology appropriately into lessons and units of instruction.

• Methods students would think critically about the integration of technology and components of quality education.

• Methods faculty would implement the Preservice Teacher Technology Competencies as exit criteria for performance-based competencies in their courses.

• Methods faculty would participate in networked learning communities at the project web site.

• Methods faculty would communicate with faculty from other universities in similar or cross-curricular areas to share methods and experiences with the integration of the new learning resources and new standards.

It also should be noted that the Participating Renaissance universities selected methods faculty members to participate in the Product Integration Training Conference and course revision project according to the following criteria:

1. Faculty members had to have primary responsibility teaching methods courses in a content area, outside of the educational technology program.

2. Faculty members had to have a potential interest in revising his or her course to integrate technology, but not already be actively engaged in technology integration.

3. Faculty members had to be a quality educator.
Actual Use of INTIME by Participating Faculty

All participating faculty had to submit their revised syllabi prior to using INTIME in the methods classes they would teach. The commonalities among these revised syllabi provided the researcher with yet another valuable source of information to be used in the interviewing process. The following class requirements proposed by the INTIME faculty assisted in structuring subsequent interviewing questions, once the researcher had a fundamental understanding of each individual case of his subjects:

1. Students were to identify the ways in which technology can support student learning.
2. Students were to view and critique INTIME online video vignettes.
3. Students were to engage in online chat using the INTIME WebCT.
4. Students were to take a set of pre- and post-tests designed to assess their technology competencies as pre-service teachers.
5. Instructors were to model the use of varied instructional technologies in alignment with those demonstrated in the INTIME online video vignettes that students were to watch as a class requirement.
CHAPTER III
METHODOLOGY

Subjects

The participants for this study had been involved in the INTIME project for two and a half years at the time of the interviews. Though initially their technological skills had not been assessed, they chose to be part of the project based on their own interest in growing professionally to integrate technology into the curriculum/syllabus.

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Once recommended by their department, college, or school of education, the participants attended a two-day workshop at the project leading institution (UNI, in this case). Both at the beginning and at the end of the workshop period, they had to take the Stages of Concern Questionnaire (SoCQ) designed to evaluate their disposition toward using the INTIME project as a technological innovation. Meanwhile, INTIME staff encouraged them to identify ways in which they could implement the project into their courses.
By the end of the workshop period, these methods faculty had already come up with ideas related to how and when into the academic year(s) to follow they would use INTIME. In most cases, they implemented the project a semester after the workshop.

Project staff members have been keeping track of the change in concerns related to the use of INTIME in the methods class by collecting successive sets of Stages of Concern Questionnaire (SoCQ) data. To date, the project evaluation file has a wealth of information in this respect, ranging from the initial two sets (in a few cases) to six sets of data.

In identifying the subjects for the present study, the researcher contacted all the 35 participants via e-mail. The following are the preliminary questions they were asked:

1. For how many semesters have you been using the INTIME project in your methods classes?
2. Are you currently using the INTIME project?
3. If the answer to the question above is no, please provide a reason.
4. Did you have to change your initial plan related to the number of semesters you thought you would use INTIME in your classroom?

Out of 35 participants, 20 (57%) answered to the e-mail message. Three of the 20 chose not to participate in the study due to professional leave or other reasons for unavailability. The remaining 17 (49% of the whole pool of 35 INTIME faculty) agreed to participate in the study. Later on, another respondent had to pull out because of concomitant duties that prevented her from continuing her participation in the study.
All of the 16 respondents used INTIME for at least one semester. Their initial e-mail responses could be categorized as follows:

1. *No change* from the initial plan.

2. *No videos* in the content area covered in class, therefore, not much use of the project that would align with course objectives.

3. Not much use of the project due to computer lab *scheduling problems* (institutional responsibility) in one case only.

4. No use of the conceptual framework, yet some of the online video vignettes were watched by students in class.

5. Learned a lot about INTIME and would want to implement more similar innovations.

6. The INTIME online video vignettes did not prove to be a valuable tool for class, therefore did not use them more than a semester (one case only).

7. *No details* offered at that time.

In addition to the personalized input collected from the 16 INTIME participants who agreed to become subjects in the proposed study, the researcher took into account the graphed SoCQ data from the very beginning of the project to date. This particular information shows the participating faculty’s evolution over time regarding comfort and familiarity in using the INTIME project. Therefore, in an attempt to assess the connection between the impact of the INTIME project and the shift in the subjects’ professional practice, the researcher also focused on the link between the analysis of the SoCQ data and the participating faculty’s perception of the project by asking the subjects...
to reflect on the evolution of their concerns related to the use of INTIME over a given number of semesters.

The interviews lasted almost 2 months, from the 2nd of May to the 25th of June, 2002, as they would be scheduled according to the availability of the subjects. Each of the respondents was interviewed twice. While the first set of interview statements supporting the research question focused on the comparison between the professional practice of the respondents before using INTIME and after implementing it, the subsequent set of statements, used during the second interview, invited the participants to reflect on how they would assess their overall experience and involvement in the project. The last of the interview questions actually tried to capture the essence of what INTIME represented for the respondents by asking them to offer an operational definition of the project filtered through their own experience. In other words, data collection process started off by locating the use of INTIME in the classroom (in terms of duration, magnitude, problems, achievements, etc.) and continued by contextualizing this information based on individual input.

The interviews were conducted over a telephone that was connected to a computer so that the conversation could be automatically recorded. In addition to having received a signed informed consent form from all participants, at the beginning of each phone interview, the researcher would ask for permission from respondents to record the conversation. After the first interviewing session with each subject, the researcher would listen to the conversation and transcribe the main ideas expressed by subjects. Member checks were ensured by briefly mentioning the highlights of the previous interview at the
beginning of the second phone interview. In this case, the subjects would agree with the summary of the previous conversation or recommend changes by rephrasing their ideas. Another way to guarantee member check would be to include the same highlights of the previous interview in an e-mail message to which the respondents could also reply with either an agreement or a set of suggestions for change of wording in the interview write-up.

**Instrument**

The interview is a form of data collection in which questions are asked orally and subjects' responses are recorded. There is direct verbal interaction between the interviewer and the respondent, which has both advantages and disadvantages compared to self-reports, inventories, and questionnaires. By establishing a proper rapport with the subject, a skilled interviewer can enhance motivation and obtain information that might not otherwise have been offered. More accurate responses are obtained as the interviewer clarifies questions that the subject may have and follow-up leads (probing). The interview allows for greater depth and richness of information. (McMillan. 2000. pp. 165-166)

For a list of recent doctoral dissertations that employed in-depth interviewing as an appropriate method of collecting data, see Appendix E. In all of these cases, in-depth interviewing allowed the researchers to extract data that is qualitative in nature. "In-depth interviewing has the distinct features of being an open situation, allowing new research direction to emerge through using techniques such as probing" (Berry, 1999, p. 4).

As noted by Fontana and Frey (1994), ethical considerations in interviewing are very important. Therefore, the researcher made sure that all of the participants in this study had signed an informed consent form specifying their right to privacy and protection from harm. Along the same lines, in analyzing and reporting data, the
researcher assigned his subjects a fictional identity, such as respondent A or M, etc. Thus all possible misinterpretation or misrepresentation of collected information was reduced to a minimum.

Since interviewing is the proposed methodology, the researcher used a semi-structured set of guiding statements that was adapted depending on the input from respondents. Starting from more factual information, these statements prompted the faculty to voice their opinions related to what they considered worked or did not work, for that matter, in implementing the project. Primarily, the initial set of guiding statements included the following:

1. Describe your teaching practice before implementing INTIME into your classroom. Also mention for how many semesters you used the project in your classroom.

2. Describe your teaching practice now that you have been using the INTIME project in your classroom for [a given number of] semester(s).

3. Share some of the transitions/adjustments to your teaching practice you had to make to accommodate the INTIME project into the methods classes you taught.

4. Describe the problems you encountered during the implementation of the INTIME project into your methods classes.

5. Share some of the achievements that you noticed as a result of using INTIME (both on your part as a methods professor as well as on the part of your students).

6. In case you collected formal or informal evidence of improved student learning as a result of using INTIME in the classroom, share some of the information.
Stemming from the main categories that make up the Stages of Concern Questionnaire (see Appendix A), the researcher also included items that assess the level of comfort and familiarity with CT applications in instruction. Once the shift in the degree of technological skillfulness has become evident, the researcher encouraged the subjects to delve into evaluating their own evolution in terms of attitudes, perceptions, and classroom practice toward using the INTIME project in the classroom, as a particular example of a CT application.

Under these circumstances, references to the evolution of the participants' concerns related to their implementation of the project were included in the following script used by the researcher at the end of the first interviewing session:

Thus far we have collected ... sets of Stages of Concern Questionnaire that you completed since the beginning of the project. I would like you to share with me the perception of how your concerns related to your use of the INTIME Project changed over time. Therefore, I will mention each of the seven different concern stages by briefly defining them, as stated by the authors of the instrument. In case you have anything to comment on in relation to the particular stage of concern, please feel free to do so. However, if there is nothing you would have to say at this moment, please say so and we will move right along.

1. The first stage, awareness, focuses on your concern about or involvement with the innovation. By the way, from now on, by innovation I mean the INTIME Project.

2. The second stage, informational, relates to the general awareness of the innovation and interest in learning more about it. Under these circumstances, at any given time, did you feel that you had been provided with enough information about the INTIME Project or you wished you knew more about it?

3. The third stage of concern on the questionnaire, personal, takes into account the role and demands the innovation (the INTIME Project) entails. In other words, how did you feel while using INTIME in the classroom: comfortable, not sure what to do, etc.
4. The next stage focuses on any management issues that you may have had to solve during the implementation of INTIME. Could you elaborate on the topic?

5. The next stage of concern deals with the impact of the innovation, that is the INTIME Project, on your students. Were you ever concerned about it? If so, did your concern change over time?

6. Have you been able to collaborate in using and possibly disseminating the INTIME Project?

7. Finally, based on your use of the project, were you able to come up with alternatives to the existing form of the innovation?

Depending on the insights that the participants had regarding their implementation of the INTIME project into their professional practice, the researcher adapted the subsequent interview questions to identify relevant patterns and cause-effect relationships in using these particular online resources. The connections between the two sets emphasized the researcher’s attempt to encourage the participants to probe more in-depth into their own experiences in college methods classrooms featuring INTIME:

1. What do you think you could have done differently to improve student learning even better?

2. What do you think INTIME could have done differently to make your use of it even better?

3. Please share something about the background of your students in an attempt to assess how INTIME met their various learning needs.

4. Thinking comparatively before INTIME and after INTIME, what do you think would be the major achievement/change in terms of your professional practice?
5. If you were given the decisional power to continue the project or replicate it under comparable circumstances, how would you go about it? Would you change anything? Would you keep it as it is? Would you have a different target audience in mind?

6. Under these circumstances, based on all that you have shared with me, how would you present/describe INTIME in a few words?

Methodology

This multiple-subject case study evaluated the impact of the INTIME project on the professional practice of participating methods professors. In this case, professional practice made reference to personal perceptions, attitudes, beliefs, and content knowledge and professional behavior used in teaching.

The emphasis of the study broke down the overall aspect of the phenomenon, the implementation of the INTIME project, into discreet units that were, in fact, the 16 faculty who volunteered to participate in the study. Each subject was interviewed twice over a period of time ranging from a few days to a few weeks apart, depending on their availability. Based on the input from participants, the researcher was able to analyze the first set of interviews and come up with in-depth questions that would invite the subjects to self-reflect on their use of the INTIME project. While there were minor contextual differences among the answers provided by respondents, the commonalities allowed the researcher draw conclusions related to facilitators and hindrances in implementing INTIME as well as to the project’s impact on the professional practice of its users.
The interviews were recorded on a computer and transcribed afterwards. The transcriptions were then analyzed for the purpose of writing a coherent narrative of the faculty’s experience in using the INTIME project in his/her classroom. While writing up the 16 separate narratives, the researcher searched for commonalities in the way each subject reflected upon the efforts of integrating technology into their professional practice. The faculty narratives represented each individual’s interview statements about their experiences in the process of using INTIME in the classroom within the larger context of past vs. current professional practice.

Data Collection and Analysis

As stated earlier, each subject was interviewed over a period of time ranging from a few days to a few weeks, depending on the availability of the individuals. The interviews were recorded and then transcribed. Data collection ended both by exhaustion of sources or by emergence of regularities/repetition in terms of the information provided by subjects.

Data analysis was reflective, as the researcher relied on his familiarity with the project and its participants. Due to the same reasons, the semi-structured set of guiding questions and statements mentioned earlier was kept flexible, depending on the input from subjects.

Though the selection process for this specific multiple-subject case study did rely on an attempt to complement the process of formally evaluating the INTIME project, the findings may not be generalizable, considering the unique nature of the project in today’s educational arena. However, in case a similar project would be undertaken by a
consortium of universities that are comparable to the five participating institutions of higher education, then this set of findings may bear generalizable significance. In addition, generalizability can be addressed by reporting findings as representative of individuals with a certain degree of technical skillfulness using a complex CT application in the classroom.

As far as internal validity is concerned, the proposed case study could be judged as objective depending on its ability to add to the knowledge base related to the effective use of CT in instruction at the college level. By the same token, provided findings prove themselves to be useful to the subjects involved, as well as to the other project participants, the case study could be also interpreted as valid internally. Moreover, member checks were used to comply with any internal validity requirements.
CHAPTER IV
ANALYSIS OF RESULTS

The analysis of the input from the 16 participants in this study followed the sequence of the set of guiding statements. The researcher chose this specific approach to the interview analysis in an attempt to probe into the individual context in which each respondent used INTIME in the classroom. While the first set of statements (used during the first interview) supporting the research question focused on the comparison between the professional practice of the respondents before using INTIME and after implementing it, the subsequent set of statements (used during the second interview) invited the participants to reflect on how they would assess their overall experience and involvement in the project. The last of the interview questions actually tried to capture the essence of what INTIME represented for the respondents by asking them to offer an operational definition of the project filtered through their own experience. In other words, the analysis of the data collected started off by locating the use of INTIME in the classroom (in terms of duration, magnitude, problems, achievements, etc.) and continued by contextualizing this information based on individual input.

Set I of Interview Statements (First Interview)

The First Interview Statement

The first set of interview statements started off by identifying the number of semesters the respondents used the INTIME project in their classroom. The main purpose for asking this question was to identify which participants employed the project consistently, which of them had to change their initial plan (and why that had to happen).
as well as which of them had to drop out because of various reasons (which would have been interesting to analyze). The 16 respondents used the INTIME project for a number of semesters ranging from 1 to 5: 6 participants used it for 1 semester only, 2 faculty used it for 2 semesters, 2 individuals implemented it for 3 semesters, 5 respondents employed it for 4 semesters, and 1 faculty used it for 5 semesters. Overall, almost two-thirds of the respondents used the INTIME project more than 1 semester. In 15 out of the 16 cases there has been no change to the initial plan based on which these participants implemented the project in their classrooms. However, in 1 of the 15 cases, though the basic requirements to use INTIME were met by implementing it 1 semester, scheduling problems prevented the methods professor from using the project more often. The only case in which the initial plan was changed had to do with the fact that one of the two classes that could have accommodated INTIME was no longer offered during the project period.

The Second Interview Statement

The second statement invited the participants to compare their professional practice between the period before implementing INTIME and that following the use of the project in the classroom. As a result of having implemented INTIME, half of the respondents (8 out of 16) indicated that they had used more instructional technology whose various applications they could model in their college classrooms. All of these 8 participants either described or implied that the impact of the project on the structure of their courses as having resulted in becoming more aware of what technological resources would be available to incorporate into instruction. The inclusion of more technology in
the classroom was considered an important outcome because of the need to accommodate technology that had become evident (either through self-reflection or by final course student evaluations) prior to implementing INTIME. An example in this respect was provided by one of the subjects, as follows:

Students would evaluate rather low the fact that there was not enough technology included in the class ... this is how I realized I was not incorporating enough technology into my teaching. In terms of teaching teachers how to use technology, I also realized that I had not done much at all other than using e-mail and word processing. (Respondent I, Interview I)

The Technology as Facilitator of Quality Education (TFQE) Model, INTIME's theoretical framework, was mentioned by one respondent in particular as having had an important impact on how she could demonstrate what teaching is all about, as referred to in the following quote:

The principles of INTIME (the TFQE Model) are something that I have always used in my class; therefore, the theoretical framework is very fitting with my practice and philosophy of teaching ... The first thing I wanted my students to see was the TFQE Model. I hope to do more with it in the future, as I already pointed to them that everything they had to know about teaching was included in the model. (Respondent D, Interview I)

One of these faculty assessed her use of INTIME as allowing her to be more flexible and comprehensive toward teaching. The main reason for this outcome resides in the makeup of her undergraduate classes in which she had both music majors and general education majors. Under these circumstances, watching the INTIME online video vignettes prompted her students to reflect on what makes good teaching, irrespective of content area. In this light, students were able to reflect on what they could see going on in the INTIME classes from a variety of viewpoints (teacher-directedness or student-centeredness; classroom management; basic concepts covered in class, etc.).
Six participants considered their use of technology in the classroom during the semester featuring INTIME as being not very different from what they would normally have done prior to incorporating the project into their syllabi. In five of these cases, the faculty had been engaging their students in very interactive classroom activities that included the following: collaborative work, small-group or classroom analysis of video tapes presenting teaching moments, guest speakers, online resources, etc. More specifically, one participant evaluated the dynamics and structure of his classes before and after INTIME as being fundamentally the same. In this light, the project represented an additional resource that his students could access in class to guide their learning about ways in which technology could be implemented in the classroom. The remaining faculty that did not think that her practice changed substantially following the use of INTIME in the classroom explained her position by stating that the focus of her course was on methods of teaching and not on technology. Therefore, INTIME represented just another teaching tool that she employed, without much emphasis being placed on the essence of the project, as it did not relate to the content of the class.

The remaining two participants had not been at the same institution of higher education prior to the implementation of the project. As a result, they started using INTIME from the very beginning of their professional practice at their respective universities. However, both expressed an increased awareness of the technological resources that they could use in their classroom in an attempt to model their utilization to their pre-service teachers.
The Third Interview Statement

The third interview statement brought up the issue of transitions and/or adjustments to their teaching practice to implement INTIME. In most cases (10 out of 16), scheduling was the most significant and/or frequent adjustment that the participants had to make to accommodate INTIME into their classroom. Examples of this instance were provided by the following subjects: “I had to take a day off to go to the computer lab on campus” (Respondent A, Interview I); “I adjusted the time schedule so there was time for them [students] to go to the lab” (Respondent B, Interview I); “getting the INTIME videos from UNI and establishing a time on campus to view them” (Respondent I, Interview I).

Out of these 10 participants, 2 were able to use a computer lab more often simply because they were involved in the INTIME project: “up until that time I had not been able to block time in the computer lab, so by being an INTIME participant, I was allowed to use the lab one day a week” (Respondent J, Interview I).

Two faculty members also mentioned the fact that technical problems hindered their scheduling process by wasting instructional time in class when the Internet connection was not working appropriately. In addition to scheduling, integrating the project into the syllabus and infusing more technology were also mentioned by two participants as transitions/adjustments they had to make in utilizing INTIME in their classroom.

Time demands on their part was also mentioned in quite a few cases (5 overall, of which 2 of the respondents also mentioned scheduling, while the other 3 listed the time
factor only as very important in their integration of the project in their instruction):

"finding time to get familiar with the project, considering what resources to replace with INTIME that would be more meaningful to the class" (Respondent D, Interview I);

"taking time to go through the vignettes so that I could choose what I wanted them to see, then designing three or four guiding questions to help them through the observation so that they were all on the same page" (Respondent F, Interview I).

Other adjustments referred to either having to incorporate more technology in the classroom featuring INTIME (as mentioned by two participants) or simply accommodating the project into the syllabus (as mentioned by one respondent).

In light of the nature of the adjustments required by implementing INTIME, 6 of the 16 respondents mentioned the fact that their role in the classroom did not change as a result of using the project, while 2 participants pointed out the fact that they did change by becoming more of a facilitator, engaging students in more hands-on activities.

The Fourth Interview Statement

The fourth statement dealt with problems encountered during the implementation of INTIME. An overwhelming majority (12 out of 16 respondents) indicated that the main problems they faced while using INTIME were technical in nature. The following examples were provided to support the comments on the issue:

- It had to do with technological problems to some extent – we were 90 miles away from campus, so no technical support available. As a result, I scheduled a whole day to be spent in a computer lab on campus; yet, we ran into all kinds of problems, they [students] could not get any of the sites to open, it would say ‘unavailable.’ Moreover, the computers were set up in a table, so the students could not access the volume control button. (Respondent A, Interview I)
• We had some real technical problems. We had installed Real Player on all the machines, yet the computers would freeze up and it would take a while for them to work again. (Respondent B, Interview I)

One of the 12 participants also mentioned scheduling as another hindrance in implementing the project in an effective manner, while two other faculty mentioned time constraints related to getting more familiar with the website, and previewing and selecting the online video vignettes to be used in class. One other participant mentioned the technical problems she had to face; however, three respondents had no such problems, as their respective institution of higher education already had the necessary bandwidth or improved it in a timely manner so that viewing the INTIME videos would not be difficult.

Two other respondents also referred to the Technology Competencies pre- and post-tests that their students had to take (either online, for the first 5 semesters, or on paper, for the last semester) at the beginning and the end of the semester during which they were exposed to INTIME in the classroom. In these two cases, the faculty emphasized the fact that the content of their classes was not technology. Therefore, students did not feel that the test was a fair assessment of what they had done in class.

One of the participants who mentioned the Technology Competencies tests and technical support as hurdles in her use of INTIME in the classroom also identified the Technology as Facilitator of Quality Education model (INTIME’s theoretical framework) as not useful, as they had been using several other similar models at their institution of higher education. However, this did not represent an impediment in using the project in the classroom.
The Fifth Interview Statement

The fifth interview statement focused on the achievements noted as a result of using INTIME. All respondents commented on the fact that INTIME helped their students one way or another to come up with ideas related to how they could integrate technology in the classroom. In other words, the video vignettes showed them different classroom activities, at various grade levels and in diverse content areas, in which student learning and communication were being enhanced by technology. Becoming more aware of the technological tools that they would have available also made these college students more comfortable/confident in identifying ways in which they could use technology. The following quotes demonstrate how these faculty members assessed the achievements in using INTIME:

- A few students, probably three out of the twenty-one, were able to access video clips related to the grade level in which they were working; they said they had found some good ideas that they shared with the class. (Respondent A, Interview I)

- It helped my students to see teachers using technology. (Respondent B, Interview I)

- The positive impact on my students was not immediate. One of them that seemed to have been impacted positively the most was preparing as a PE teacher. It had not occurred to her how she could incorporate technology to enhance her instruction until she got out in the field where she did use a lot of technology influenced by the INTIME videos. (Respondent O, Interview I)

In two cases, the participating faculty emphasized the fact that the ideas their students could derive from watching the INTIME video vignettes were aligned more with how to use questioning techniques or with getting a better cross-curricular view of what teaching means, respectively.
Another respondent pointed out that the most relevant achievement that she noted in her class was the online discussion in the INTIME WebCT based on what students had seen in the video vignettes. The experience was very meaningful to her because she could relate to it in teaching a subsequent online class.

Two faculty also mentioned the Technology as Facilitator of Quality Education model (INTIME's theoretical framework) as having assisted their students in covering “all the bases of what it means to be a good teacher and what a good classroom learning environment might look like” (Respondent M, Interview I), in one case, as well as in creating their own rubric and evaluation tools (in tune with new NCATE requirements in place at that IHE), in the other case.

One participant pointed out that “a few students (probably 3 out of 21) were able to access video clips related to the grade level in which they were working; they said that they had found some good ideas that they shared with the class …” Because of technical problems, the rest of the students found the experience frustrating, thus impacting on the effectiveness of the project. However, this instance is insular in the larger perspective of achievements noted in using INTIME in the college classroom. All the other respondents expressed positive outcomes in terms of students getting more ideas about the technologies available to them, thus being more confident in integrating them into the classroom, as demonstrated by the following:

- Students getting more ideas on how to incorporate technology into instruction as well as the faculty becoming more aware of the types of technology available for their students (as mentioned by two participants).
• Students displaying more confidence in employing technology in the classroom (as stated by two respondents).

• Students becoming more aware of the different technologies available to them as well as becoming more inclined to incorporate these technologies into instruction (as pointed out by five faculty); one of these five respondents also mentioned that she was able to adapt and improve her practice as a result of taking into account the reflections her students wrote about the class featuring INTIME.

• Students improving their technology skills, as reflected in the scores on the Technology Competencies pre- and post-tests administered at the beginning and the end of the semester during which they used INTIME in the college classroom (as mentioned by one faculty).

The Sixth Interview Statement

The sixth statement prompted respondents to share with the researcher some of the formal or informal evidence of INTIME-assisted improved student learning that they may have collected. Not all respondents tackled the topic (12 out of 16), as they did not have any specific evidence collected. The main reason for this state of affairs had to do with the fact that there was no specific way of assessing what the students actually gained from their experience with INTIME, unless they expressed themselves in this respect.

However, an overall, informal evaluation of how students learned with INTIME focuses on the broader scope and increased awareness of the ways in which they could incorporate technology into their practice. In this respect, students did mention that they liked the technological tools used in the INTIME video vignettes (such as the
SmartBoard or the Quicktionary Pen). Moreover, “a number of students were inspired, motivated to do better work because of the availability of technology” (Respondent P, Interview I).

Two respondents, in particular, used some the following comments their students made after having watched the INTIME video vignettes to demonstrate improved student learning:

- I would like to use this type of active learning project in my classroom because I think the students would gain more from this type of learning than from reading textbooks or from listening to a lecture. (Respondent H, Interview I)

- The idea given in the video is fantastic and worth using in my future classroom. After watching this video, I would encourage my colleagues and other pre-service teachers to consider the concept of this lesson in future planning. (Respondent H, Interview I)

- I enjoyed this video. As I watched this video and saw the excitement of the children, I found that I could also use this lesson in upper elementary grades with some adaptations. (Respondent H, Interview I)

- I did not realize that technology could be used in such a way. (Respondent I, Interview I)

- It was interesting to see how the teacher in the video adjusted the technology up and down to meet the needs of her classroom. (Respondent I, Interview I)

One faculty mentioned that the focus of her class was not technology per se. Consequently, “one thing they learned from using the project is that there are different aspects of the classroom to look at (democracy, content standards, etc.), as opposed to focus on just what the teacher is doing; they became aware of these other aspects related to teaching and learning by making their rubrics based on the TFQE model” (Respondent N, Interview I).
Set III of Interview Questions (Second Interview)

The next set of interview questions relied on the input from participants collected during the first interview. It became apparent that the following questions would probe deeper into assessing the individual experiences of these faculty members in their college classrooms featuring the INTIME project. While the first two questions in this second set somewhat recap what the subjects had already said in their previous interview, the fourth and fifth questions prompted the respondents to put their self-reflections of the INTIME experience into a larger perspective that would allow them to realize the impact of the project upon their professional practice. Based on their comments, the researcher asked them to tie their perceptions, attitudes, and modified practices to assuming a presumptive/prospective decision-making role in continuing the project or replicating it under comparable circumstances. Finally, the last question of the second set invited the subjects to offer an operational definition of the project filtered through their own experiences.

The First Interview Question

The first question emphasized the alternative actions the respondents could have taken to make a greater impact on student learning assisted by INTIME. Nine of the 16 respondents mentioned more time devoted to reviewing constantly or presenting the project in class as a factor that could have had a greater impact on student learning. In this light, scheduling and better technical support were perceived as important factors to consider, as they could also have allowed the faculty to spend more time instructing, as opposed to trying to overcome technical or computer lab reservation problems.
The other ideas about what these faculty could have done differently to enhance student learning even more include access to INTIME technology, increased use of the TFQE Model, better connectivity and technical support, more use of the INTIME WebCT chat room feature, more frequent feedback to students based on their INTIME-centered assignments, and enhanced communication between project staff and participants, as follows:

- Provide access to the technology featured in the INTIME video vignettes so that their students could experiment with it (as mentioned by one faculty).

- Use more Technology as Facilitator of Quality Education model areas in classroom discussions and analyzing the INTIME video vignettes (as stated by one respondent).

- Provide better access to the Internet, translating into less technical problems, as well as better coordination with the project staff (as pointed out by one participant).

- Have students use the INTIME WebCT chat room to exchange ideas (as mentioned by one subject).

- Communicate with other project participants in an attempt to identify other ways in which they could use INTIME in the classroom (as brought up by one faculty).

- Provide students with feedback on their post-viewing reflections as well as with follow-up activities designed to reinforce the knowledge newly acquired (as referred to by two participants).

Two respondents stated that they would not have done anything differently. One of the two justified that position by focusing on the nature of his class that did not focus on technology, but on methodology of teaching English Language Arts.
The Second Interview Question

The second question changed the focus of the previous question to what more the project itself could have provided to make its use in the classroom more effective. The input from the 16 respondents could be grouped in the following categories that encompass all aspects related to the INTIME project: website, technology, video vignettes, and project management. While the first category refers to possible/recommended improvements that would make website navigation more user-friendly, the second category points out a desired access to the technology featured by the INTIME video vignettes. Along the same lines, the third category focuses on making additional, constantly updated online case studies easily accessible and relevant to the end-users in terms of content. The fourth category mentioned by respondents highlights potential changes pertaining to communication with and active involvement of project participants in implementing and developing INTIME. The following brief statements include quotes from respondents, as they demonstrate the ways in which these faculty members devised improvements that would better serve their professional needs:

- Website:
  - Provide a “synopsis of the theoretical framework with specific examples, more like a script to go with the video examples, so that students would know exactly what to look for” (Respondent G, Interview II).
  - Update the menu list of teachers that are available online (Respondent J, Interview II).
  - Make the whole site a little less overwhelming or make its main features stand out (Respondent L, Interview II).
o Place more focus on technology and make the other TFQE model elements support it (Respondent M, Interview II).

o Add a "how to use the technology featured on the website" page or create a link to other websites that provide the users with the necessary procedural knowledge in operating the technological tools used in the video vignettes (Respondent M, Interview II).

o Include an introductory, guide-through video with suggestions on how to navigate the site in a certain sequence (Respondent M, Interview II).

• Technology:

  o Make it available to the project faculty so that they could actually model its use in their classroom; another way to achieve the same goal would be to locate the resources that exist at all the participating universities and make use of them (Respondents C and M, Interview II).

• Video vignettes:

  o Add more video examples for as many content areas and age levels as possible (this has been the most frequent recommendation from respondents B, D, F, H, J, and P, Interview II).

  o Show more student interaction in the video examples (Respondent J, Interview II).

  o Provide alternative ways to access the video vignettes (on CD-ROMs or DVDs) that are updated regularly in terms of content (Respondent A, Interview II).

• Project management:

  o Better communication with the participants and more flexibility in terms of ways to collect input from participants, possibly an oral interview, as opposed to submitting a written final course revision report (Respondent M, Interview II).

  o More meeting time with participants and staff so that they could all share ideas and concerns related to the use of INTIME in the classroom as well as involve them in deciding what types of technology and teachers (content areas) the project could feature (Respondents I, M, O, and P, Interview II).
Three participants did not have any suggestions related to what INTIME could have provided more to improve its use in the college classroom. However, one of them mentioned the fact that the initial project coordinator at their IHE had not publicized the project appropriately, thus leading to unrealistic expectations on the part of the participating faculty from that IHE which, in turn, may have impacted the integration of the project in their courses. Along the same line, yet another subject mentioned the fact that "it could all have to do with how the project is used in the classroom, as the teacher has a great impact on whether or not any given innovation is used to its maximum impact in the classroom" (Respondent K, Interview II). Finally, one last participant pointed out the fact that the project could have been more effective if it had been used in a technology-centered class, as opposed to hers that dealt with methods of teaching a specific content area.

The Third Interview Question

The third question assessed the extent to which the INTIME project met the varying learning needs of the students exposed to it by addressing their learning styles. All respondents commented that INTIME did meet the learning needs of their students by accommodating their learning styles, primarily due to the multimedia nature of the project. Therefore, both visual and auditory students could access and internalize easily the information provided. A few of the subjects mentioned the fact that they had some students in their classes that were disabled either visually or auditorily. Yet, they all could complete their INTIME-based classroom assignment. Moreover, they would also comment how the structure of the website and its navigability allowed them to learn.
A few participating faculty also indicated that the technological skills of their students (as assessed by means of the Technology Competencies pre- and post-tests administered by UNI) increased as a result of using INTIME in the classroom. Moreover, in these few cases, there was noted gain in terms of both procedural and conceptual knowledge on the part of the students.

Overall, the respondents provided the researcher with the following descriptors or phrases that describe the INTIME project and justify the fact that it met the learning needs of the students using it in their college-level classrooms: “it helped reduce the anxiety level in using technology” (Respondent H, Interview II); “the gain in technology skills is linked to the opportunity that INTIME offered students to improve themselves” (Respondent J, Interview II); “stimulating” (Respondent L, Interview II); and “full-bodied” (Respondent M, Interview II).

The Fourth Interview Question

The fourth question invited the subjects to synthesize all that they had shared with the researcher into identifying the major achievement or gain that they could notice in terms of their professional practice as a result of having been involved in the INTIME project. Ten out of the 16 respondents indicated that their use of the INTIME project in the classroom made them more aware of ways to incorporate technology in the classroom. As a result, classroom discussions would be geared toward sharing such knowledge with their students, in an attempt to encourage them to be reflective and inquisitive as professionals. At the same time, the project motivated the faculty members
to include other online resources into subsequent syllabi, therefore making a few of them shift to a more facilitating role in the classroom.

Three participants considered their INTIME-related experience to have been a logical continuation of what they had done in the classroom before implementing the project. Moreover, one of them commented on the fact that the video vignettes "would allow one to individualize instruction by referring them [students] to different parts of the videos or to different ideas" (Respondent A, Interview II).

Yet another faculty pointed out that INTIME helped her provide her students with "a more comprehensive and in-depth underpinning" (Respondent D, Interview II) to what she was trying to teach. Another important aspect of her use of the project in the classroom was the fact that the "philosophical basis" (Respondent D, Interview II) gave her credibility because it reinforced what she was teaching. As a result, she became more comfortable as a professional.

Two respondents focus on their use of the theoretical framework that led to either more flexibility in cross-curricular teaching ("a good teacher has skills that will transfer into any setting, while the only thing that changes is the content" (Respondent F, Interview II) or to using the TFQE Model as a good resource for students when designing an evaluation rubric.

The Fifth Interview Question

The fifth question emphasized the possible changes in the structure of INTIME the participants would make if they were given the decisional power to continue the project or replicate it under comparable circumstances. The input from the 16
respondents could be grouped in the following categories that refer to the INTIME project in all of its aspects, categories that were also mentioned by respondents in relation to possible changes in the structure and organization of the project that could have impacted positively their use of INTIME: technology, video vignettes, website, and project management. While the first category refers to a desired access to the technology featured by the INTIME video vignettes, the second category points out providing end-users with additional, constantly updated online case studies across all content areas and grade levels. Next, references to potentially improving the website focus on more user-friendly website navigation as well as integrating it into a professional development program for teacher educators or breaking it into modules that could be integrated into a whole-semester unit of instruction for preservice teachers. The last category mentioned by respondents, project management, highlights potential changes pertaining to communication with and active involvement of project participants in implementing and developing INTIME. The following brief statements include quotes from respondents, as they demonstrate the ways in which these faculty members devised improvements that they would like to see in place:

- Technology:
  - In addition to updating it (Respondent H, Interview II), possibly make it available to project faculty (either by purchasing or renting it) so that they could model its use with their students (Respondent C, Interview n). Another way to go about it would be to locate the resources that exist at all the participating universities and make use of them (Respondents K and M, Interview II).

- Video vignettes:
  - Provide more content examples (Respondent D, Interview II).
• Website:
  o Use pieces of it throughout the instructional process (which could possibly last the whole semester); moreover, these pieces of the project could represent units or modules that could be incorporated into different classes, depending on the course focus and the needs of the students (Respondent J, Interview II).
  o Add a “how to use the technology featured on the website” page or create a link to other websites that provide the users with the necessary procedural knowledge in operating the technological tools used in the video vignettes (Respondent M, Interview II).
  o Include an introductory, guide-through video with suggestions on how to navigate the site in a certain sequence (Respondent M, Interview II).
  o Use it as a component of a bigger professional development/training for teacher educators (Respondent G, Interview II).

• Project management:
  o “Better planning that would involve not only people in technology, but also include input from classroom teachers and methods faculty.” (Respondent B, Interview II) In other words, “find a more systemic way to discover the best situations to be taped.” (Respondent B, Interview II)
  o More meetings involving project faculty and staff so that they could all plan ahead, share ideas, and discuss concerns related to the use of INTIME in the classroom (Respondents O and P, Interview II).
  o More flexibility in terms of ways to collect input from participants (like an oral interview, as opposed to submitting a written final course revision report).

Other than these aforementioned suggestions, the respondents stated that they would use the project as it is (Respondents F, O, and N, Interview II), though they would like to benefit from some of the improvements they recommended previously (Respondent O, Interview II).
The Sixth Interview Question

The last question prompted the participants to sum up their whole INTIME experience, from all the perspectives mentioned in answering the previous questions, by offering an operational definition of INTIME. The following quotes represent a vast array of interpretations of what the project could represent in the college classroom. The commonalities among all of them point out effective teaching making effective use of technology, as featured in the INTIME online video vignettes that are, in fact, a very useful resource for pre- or in-service educators, as well as teacher educators.

A series of classrooms vignettes that have been video taped based on a common framework to illustrate effective classroom teaching. (Respondent A, Interview II)

A most ambitious project whose intent was most honorable; however, it needs some revision, as most good ideas do, and put in the classroom, it posed more problems than foreseen; there is a great deal of good within the whole INTIME project. (Respondent B, Interview II)

A collection of videos of teachers in various content areas and grade levels that effectively integrate technology in their deliverance of instruction. The target audience would be practicing and pre-service teachers. A very well done resource for college classroom use. (Respondent C, Interview II)

INTIME is a source and a resource for presenting to university students actual classrooms where teachers are using technology as well as good teaching practices to implement content and good teaching practices in a real life situation. (Respondent D, Interview II)

It’s a very effective grant, it provided new innovative technology to future classroom teachers and to graduate students [graduate teachers out in the field]. (Respondent E, Interview II)

An online program that has the capability of letting us view shorts segments in the classroom, interviews with the teachers, looking at how the classroom is working, looking at the total model, as there are several vignettes for each teacher, seeing different content areas, different grade levels, different curricular areas, and allowing us to observe … stop at any point and discuss, and, basically, let us
facilitate how to use those vignettes in our classroom instruction to help prepare teachers. (Respondent F, Interview II)

A website that has a variety of videos available that provide examples of teachers using technology in their classrooms, some of them provide examples where students are using technology to communicate to other students, while others are using technology to learn content. It's worth going out and looking at them. (Respondent G, Interview II)

A good project that not only models technology integration, but also shows others how to develop professionally; it caters to the needs of both pre-service and in-service teachers. (Respondent H, Interview II)

A government-funded program that is teaching professors in colleges of education how to teach their teacher candidates to use technology in a more efficient and better way, and become in tune with what is happening in technology in education. (Respondent I, Interview II)

Resources to help pre- and in-service teachers to have models or approaches of dealing with and integrating not only the technology part, but also the concepts and skills that are presented. A valuable resource, yet, we have not tapped into what it could be, as it could be a very, very valuable resource even broken down into modules. It is a resource that can be used from teacher-directed to student-centered kinds of activities in higher education, so we are getting away from lecturing to more students activities, hands-on activities, applying critical thinking and making decisions based on student needs and then applying it in our students' lesson plans so that they can use it, and actually think of how to use it. (Respondent J, Interview II)

A nice collection of classroom teachers integrating technology. (Respondent K, Interview II)

A great resource, a teacher could get a lot of beneficial ideas, context, and experiences from it, given the investment of time and energy to see what's there and how it might apply to an individual teacher's situation. (Respondent L, Interview II)

INTIME is a website that allows you to view teachers and students using technology in real classrooms. The people who might be interested in this could be pre-service teachers, in-service teachers, administrators wanting to provide ideas about technology to their staff; it could be for anyone interested in learning more about technology in education. A bird's eye view of real teachers using technology with real students, an opportunity to "peek" into classrooms and see what the possibilities might be to use technology; it is a wonderful and thorough
resource, especially because it is for free; teachers need something that is very high quality that does not require paying for; it offers something for almost everyone. (Respondent M, Interview II)

It's not something I would use in a methods class, as it would be a great thing to use in a technology class. (Respondent N, Interview II)

Strategies that practicing educators have used to enhance their instruction with the use of technology. (Respondent O, Interview II)

A program by which they could show us and demonstrate to us the importance of incorporating and infusing technology into methods courses and I think that is very important that we do that because our graduates going out into the classroom will be using technology and in fact, most of them are starting to want to know how to use technology, not just technology in general, but technology in the writing process, in the composing process, in other areas too. It was a very noble effort of a group of people trying to impress upon all of us the importance of showing our students how to use technology in the classroom. If nothing else, it raised my consciousness of how to use technology, it really motivated me, if not forced me to take a very, very close look at this and do something about it. (Respondent P, Interview II)

Stages of Concern Questionnaire - SoCQ (Set II of Interview Questions, First Interview)

As the purpose of the study was to investigate the impact of the INTIME project on the professional practice of participating faculty, the graphs of Stages of Concern Questionnaire data collected over the duration of the project were initially used to devise the first set of interview questions. However, during the interviewing process, it became apparent that asking the subjects to comment on the evolution of their concerns related to the implementation of INTIME would provide the researcher with more in-depth information about the utilization of the project. These data represent the pre-interpretation procedural stage of analyzing the Stages of Concern Questionnaire (SoCQ) (Hall et al., 1979) that indicate the familiarity and comfort that faculty display in using an
instructional innovation such as INTIME. It should also be noted that the analysis of the SoCQ data is part of the process of formally assessing the effectiveness of the project.

However, the researcher’s intent was not to integrate the SoCQ data into the analysis of participant self-reflective input. The only overlap between their comments on the concerns related to the use of INTIME and the self-reflections as practitioners emphasized the increasing familiarity and comfort in using the innovation in the college classroom. In this light, all findings focused on SoCQ data fit the larger picture of the impact of the project on its users.

**The First Stage of Concern**

The first stage, awareness, focuses on indications of any possible concern about or involvement with the given innovation, in this case the INTIME project. Thirteen out of the 16 participants stated that their awareness of the project (its nature, structure, and complexity) increased significantly over time. The following quotes reflect the augmented awareness related to the use of INTIME in the college methods classes:

- [Awareness] increased a great deal, as I found out the depth of the project as well as the thoroughness with which it had been done. Moreover, I think that the philosophical underpinnings and the extent to which each item is covered (definitions, checklist, examples, and references) are impressive. (Respondent D, Interview I)

- [Awareness] did change dramatically, it was a matter of jumping in and figuring out how I was going to use it, rethinking some of the positions I was going to take, timing of what and how I would use this with my students. (Respondent F, Interview I)

- It changed from ‘didn’t know anything’ to ‘I know a lot about it.’ (Respondent H, Interview I)
• [Awareness] increased significantly over time. I had to take the conceptual framework and align it with different national programs, such as INTASC, NCATE, etc. Therefore, I aligned the components of the INTIME model with the conceptual framework for teacher training and teacher education in place at my university. Thus I became very familiar with the INTIME model. I think that the INTIME model was very well put together and lent itself well to various programs in place across the country, especially considering how teacher preparation programs are changing nowadays. (Respondent I, Interview I)

The remaining three respondents pointed out their minimal concerns were due to the fact that they were comfortable with the amount of project-related information provided to them at the initial workshop.

The Second Stage of Concern

The second stage, informational, emphasizes the general awareness of the given innovation that results in an interest to learn more about it. Thirteen out of the 16 faculty declared that they had been provided with sufficient information in a timely manner all throughout the duration of the project. Two of them actually mentioned the high quality of the initial workshop held at the University of Northern Iowa prior to implementing the project, while the third participant commented on the effective communication between project faculty and management staff. The following excerpts from different quotations mention the impact of the initial workshop on the participating faculty’s understanding of what the INTIME project was about and how she could incorporate it into the classroom:

• The initial workshop was very helpful ... sufficient information provided readily ... as a result, I felt like I knew enough about the project to use it in the classroom in an effective way. (Respondent D, Interview I)

• I found the workshop a very informative meeting ... I went away understanding and knowing what was available, how to use it ... not worried about ways to use it in the classroom. (Respondent K, Interview I)
Three respondents referred to needing more information because of various reasons: either the initial workshop did not inform them adequately in terms of paperwork and deadlines involved in participating in the project, or the mismatch between what INTIME had to offer to their students and their instructional needs.

**The Third Stage of Concern**

The third stage, personal, takes into account the possibility that the implementer of a given innovation “is uncertain about the demands of the innovation, his/her inadequacy to meet those demands, and his/her role with the innovation” (Hall et al., 1979, p. 7). Fifteen of the 16 participants expressed their consistent or increasing comfort in using the project in their classroom. While a few of them were not at all concerned about their role in implementing the innovation once they attended the initial workshop at UNI, most of these 14 faculty got more familiar with the structure, format, and content of INTIME. Three of these subjects also mentioned the fact that they had to take into account their low initial technological skills that could have impacted the use of the project. However, their experiences turned out to be enriching, as they could improve these skills while learning along with their students how to use different technologies.

The following quotes highlight the degree to which participating faculty changed their perception of their role in implementing INTIME in the college classroom:

- As far as being comfortable with using parts of the project in the classroom, I was comfortable. Actually, I really appreciated that we were given the choice of what we would use and how much we would use, I did not feel forced to use parts of it that I did not find useful. Thus the comfort zone increased over time. (Respondent B, Interview I)
• Initially, I was not sure what my role was when I started out, so I decided this would be sort of 'try and see' if this works and has an impact and it's going to be valuable, if not, I may have to get out of it. After using it the first semester, I was much more comfortable with it and I could see other ways in which it could be implemented the second semester. I view this as being on the same plane as trying new curriculum or changing the syllabus, you don't know until you try it. Having more experience in guiding the class through it, I became better acquainted with it. In addition, the observation reports that students had to turn in helped me identify what I needed to do further to adjust how I was delivering that part of the course. (Respondent F, Interview I)

• As I was not very technologically competent, initially I felt very ill-prepared for the project as well as very apprehensive about using it. All concerns got appeased as I realized that my students were very excited about using it in the classroom. As I did not teach a technology class, but an English methods one, initially I did not feel very comfortable doing this. However, I knew I had to incorporate some technology in the classroom and with the help of the students, it all worked very well, I also learned a lot, too. (Respondent P, Interview I)

The only case in which the participant had constant concerns related to implementing INTIME had to do with the fact that her students had first-hand exposure to observing master teachers in the classroom. Therefore, she knew how to use the project in the classroom, yet she could not see the relevance in it for her students. In other words, the context in which this particular faculty was implementing INTIME was not quite accommodating to the innovation, as students had other sources of information that they could use. Therefore, a better selection of participants process could ensure that there is a match between the nature, content, and format of the innovation and the needs of the prospective audience/users.
The Fourth Stage of Concern

The fourth stage, management, refers to the fact that “attention is focused on the processes and tasks of using the innovation and the best use of information and resources. Issues related to efficiency, organizing, managing, scheduling, and time demands are utmost” (Hall et al., 1979, p. 7). While 7 of the 16 faculty members reported no concerns related to the management of INTIME in their classrooms, the remaining subjects mentioned the following as hindrances:

- Scheduling (Respondents D, J, and M, Interview I).
- Time demands (Respondents H, I, L, and O, Interview I). Two of these faculty members brought up the issue of emerging deadlines and paperwork that would limit the amount of time they could spend on getting more familiar with the content and format of the project.

The Fifth Stage of Concern

The fifth stage, consequence, relates to attention being focused “on impact of the innovation on students in his/her immediate sphere of influence” (Hall et al., 1979, p. 7). Almost all the respondents (15 out of 16) expressed no consistently minimal or significantly decreasing concerns in this respect. Out of these 15 faculty members, 5 mentioned the fact that initially they were either unsure or a little apprehensive of using INTIME in their classrooms. Yet, as they got more familiar with the project and students were showing interest in the online video vignettes, the participants’ concerns dropped substantially.

The only case in which the subject did not show a positive evolution in terms of her consequence concerns could be explained by the fact that the focus of the class
featuring INTIME was not technology, but methods of teaching a specific content area. As a matter of fact, this argument is quite frequent in explaining the shift from the initial to a highly contextualized use of the project, as mentioned by the participant herself.

The Sixth Stage of Concern

The sixth stage, collaboration, emphasizes “coordination and cooperation with others regarding the use of the innovation” (Hall et al., 1979, p. 7). Almost all the subjects (15 out of 16) either shared the innovation with colleagues (9 of the 15 participants) or disseminated it by presenting the project at various conferences (6 of the 15 participants); a few of these faculty actually did both. One subject could not share or disseminate information about INTIME because of time constraints as well as remoteness from the main campus of her IHE (as she works at a partnership school).

The Seventh Stage of Concern

The last stage, refocusing, points out “the exploration of more universal benefits from the innovation, including the possibility of major changes or replacement with a more powerful alternative. Individual has definite ideas about alternatives to the proposed or existing form of the innovation” (Hall et al., 1979, p. 7). Six out of 16 respondents stated that they were able to come up with ideas related to how else to integrate INTIME in their courses, based on the dynamics of the classroom and student reactions to the online video vignettes. The remaining 10 faculty members said that they would use the project again without major changes, if any. A more in-depth analysis of the connection between the first stage (awareness) and the last stage (refocusing) reveals that most of the participants show increasing familiarity with and comfort in using
INTIME in their classrooms, which translates into the fact that they would continue using it as they have so far. The main reason behind this state of affairs has been expressed either explicitly or implicitly by most of the subjects as being the fact that the project worked well, in spite of the occasional technical or scheduling problems that were not at all related to the content or format of INTIME.

Another way to indicate the degree to which INTIME has impacted the professional practice of its participating teacher educators was to invite them to provide an operational definition of the project. All of the following represent a concise description of what INTIME was initially set out to do, what it was able to do, and how it would be able to change to meet the needs of its users. It should also be noted that these definitions rely on the individual perceptions of the project as filtered through implementation in the college classroom, that is, through becoming aware of the ups and downs entailed in utilizing INTIME to increase student learning. One common theme in all of the following statements is defining INTIME as a valuable resource for pre-service teachers and teacher educators interested in learning about new computer technology applications and identifying ways to incorporate them in the classroom. Making these potential users aware of the available technologies and providing them with relevant examples of real teachers using them in real classroom with real students was one of the major initial goals of INTIME. The degree to which the project managed to meet its goals could also be determined from the operational definitions of INTIME developed by the participants:

A series of classrooms vignettes that have been video taped based on a common framework to illustrate effective classroom teaching.
A most ambitious project whose intent was most honorable; however, it needs some revision, as most good ideas do, and put in the classroom, it posed more problems than foreseen; there is a great deal of good within the whole INTIME project.

A collection of videos of teachers in various content areas and grade levels that effectively integrate technology in their deliverance of instruction. The target audience would be practicing and pre-service teachers. A very well done resource for college classroom use.

INTIME is a source and a resource for presenting to university students actual classrooms where teachers are using technology as well as good teaching practices to implement content and good teaching practices in a real life situation.

It’s a very effective grant, it provided new innovative technology to future classroom teachers and to graduate students, graduate teachers out in the field.

An online program that has the capability of letting us view shorts segments in the classroom, interviews with the teachers, looking at how the classroom is working, looking at the total model, as there are several vignettes for each teacher, seeing different content areas, different grade levels, different curricular areas, and allowing us to observe ... stop at any point and discuss, and, basically, let us facilitate how to use those vignettes in our classroom instruction to help prepare teachers.

A website that has a variety of videos available that provide examples of teachers using technology in their classrooms, some of them provide examples where students are using technology to communicate to other students, while others are using technology to learn content. It’s worth going out and looking at them.

A good project that not only models technology integration, but also shows others how to develop professionally; it caters to the needs of both pre-service and in-service teachers.

A government-funded program that is teaching professors in colleges of education how to teach their teacher candidates to use technology in a more efficient and better way, and become in tune with what is happening in technology in education.

Resources to help pre- and in-service to have models or approaches of dealing with and integrating not only the technology part, but also the concepts and skills that are presented. A valuable resource, yet, we have not tapped into what it could be, as it could be a very, very valuable resource even broken down into
modules. It is a resource that can be used from teacher-directed to student-centered kinds of activities in higher education, so we are getting away from lecturing to more student activities, hands-on activities, applying critical thinking and making decisions based on student needs and then applying it in our students' lesson plans so that they can use it, and actually think of how to use it.

A great resource, a teacher could get a lot of beneficial ideas, context, and experiences from it, given the investment of time and energy to see what's there and how it might apply to an individual teacher's situation.

INTIME is a website that allows you to view teachers and students using technology in real classrooms. The people who might be interested in this could be pre-service teachers, in-service teachers, administrators wanting to provide ideas about technology to their staff, it could be for anyone interested in learning more about technology in education. A bird's eye view of real teachers using technology with real students, an opportunity to "peek" into classrooms and see what the possibilities might be to use technology, it is a wonderful and thorough resource, especially because it is for free; teachers need something that is very high quality that does not require paying for, it offers something for almost everyone.

Strategies that practicing educators have used to enhance their instruction with the use of technology.

It's not something I would use in a methods class, as it would be a great thing to use in a technology class.

A program by which they could show us and demonstrate to us the importance of incorporating and infusing technology into methods courses and I think that is very important that we do that because our graduates going out into the classroom will be using technology and in fact, most of them are starting to want to know how to use technology, not just technology in general, but technology in the writing process, in the composing process, in other areas too. It was a very noble effort of a group of people trying to impress upon all of us the importance of showing our students how to use technology in the classroom. If nothing else, it raised my consciousness of how to use technology, it really motivated me, if not forced me to take a very, very close look at this and do something about it.
CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Complementing the project formative and summative evaluation efforts, this study aimed at investigating the utility of the project by involving a group of INTIME methods professors at the five participating universities. These faculty members were asked to reflect on how the project impacted their professional practice, in an attempt to locate facilitators as well as hindrances in implementing INTIME in the college classroom. Results and conclusions would add to the knowledge base about the use of technology in university teacher education programs.

The underlying hypothesis relied on the fact that the INTIME project was initially designed to bridge a gap between the actual and desired technology proficiency levels of pre-service teachers. Therefore, the project would be beneficial both for participating teacher candidates and for methods faculty by providing them with online video vignettes demonstrating sound teaching practices assisted by computer technology.

The data collected represented self-reflections that the INTIME faculty who participated in this study shared with the researcher. The interview questions and statements guided the subjects through the process of probing into assessing their individual experiences in the college classrooms featuring INTIME. Starting from more factual information, these questions prompted the faculty to voice their opinions related to what they considered worked or did not work, for that matter, in implementing the project. Finally, the participants suggested an operational definition of the project that
would concisely sum up their perceptions, attitudes, and modified professional practices, if the case, as a result of utilizing INTIME in their classrooms.

The primary focus of the study was determining the impact the project had on its participants. This effect on the professional practice of the faculty would, in turn, shed light on the facilitating factors as well as the hindrances in implementing INTIME. Finally, based on the information the participants in the study shared with the researcher, there have been some recommendations made for future use/development.

Data analysis reveals the following conclusions:

- The main hindrances in implementing INTIME were, in the order of the frequency of references made by participants: technical problems, time demands, scheduling as well as the Technology Competencies pre-and post-tests. However, the vast majority of responses indicated the first category as prominent (12 out of the 16 faculty mentioned it) compared to one or two responses referring to the other hindrances mentioned above.

- Expressed either explicitly or implicitly in their answers or comments, the main facilitators in using INTIME in the college classroom were intricately tied to the very essence and structure of the project: its content and format. While the former provided its users with a rich collection of online video vignettes featuring classroom teachers at all grade levels and in all content areas, the latter accommodated the different learning styles of the users. Therefore, in most cases, INTIME proved to be a valuable resource that could meet the various learning needs and interests of the audiences. In a few cases, frequent technical problems as well as the students' varying learning needs were mentioned as possible reasons for the fact that the project did not work as expected or as planned. In either case, the content and format of the project had nothing to do with the hindrances that affected its implementation.

Yet another example of the fact that the nature and structure of INTIME met the proposed goals of the project stems from what the participants considered as achievements noted in their classrooms that featured the online video vignettes. All respondents mentioned the fact that students became more aware of the technology that would be available to them to use in the classroom once they go out in the field.
Moreover, in a few cases, students also became more knowledgeable in terms of content-specific procedures (such as questioning techniques or creating assessment rubrics), the use of WebCT (yet another example of computer technology applications), and the holistic view on teaching as promoted by the Technology as Facilitator of Quality Education Model (TFQE), which is INTIME's supporting theoretical framework. It should also be noted that all respondents mentioned the fact that the project met the learning needs of their students by accommodating their learning styles. In this light, a few participants mentioned comments made by their students related to the fact that their learning preferences, affected or not by a possible disability, were completely satisfied by the multimedia nature of INTIME (that is, its visual and auditory elements, the written text, as well as the scrolling text accompanying the video vignette).

Overall, the impact of the project on the professional practice of the participants translated into increased awareness and knowledge of the various instructional technologies as well as of ways to incorporate them into the classroom. As a result, classroom discussions that followed watching the INTIME online video vignettes would be geared toward sharing such knowledge with students, in an attempt to encourage them to be reflective and inquisitive as professionals. Another outcome of the positive impact of the project on the professional practice of its users was their motivation to include more online resources and technology into their syllabi, therefore causing a few of these faculty to shift to a more facilitating role in the classroom.

As far as recommendations for future use/development of the project are concerned, the participants in this study offered some valuable suggestions that could be
taken into account in continuing INTIME or possibly replicating it under comparable circumstances. As prompted by different interview questions, the respondents identified both how else they could make a better use of the project and how the project itself could be improved. For the first category, most of the subjects mentioned allotting more time to get familiar with the INTIME website and its various, constantly updated features. In addition, the faculty also pointed out that they would structure assignments differently to include frequent feedback and increased instructional time. Moreover, they would also like to engage in online conversations with fellow participants related to use, concerns, and issues in implementing the project into the college classroom. All of these ideas proved that the faculty displayed augmented familiarity with and comfort in using INTIME as well as enhanced awareness of the availability of technological resources for instructional purposes, which, in fact, was one of the main objectives of the project.

Recommendations for future project developments referred to all the aspects related to its implementation: reliable technical support, rich content demonstrated by a wide range of superior quality video vignettes, user-friendly website, and effective management. Since putting INTIME into practice has been a valuable learning experience for all those involved, the foregoing suggestions pointed to continuing what has proven to facilitate the use of the project (for instance, its content and format), while solving some of the problems that hinder its utilization (such as technical glitches, scheduling arrangements, or time allocation).
REFERENCES


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APPENDIX A

STAGES OF CONCERN QUESTIONNAIRE

HYPOTHESIZED DEVELOPMENT OF STAGES OF CONCERN
Stages of Concern About the Innovation

6 REFOCUSING: The focus is on the exploration of more universal benefits from the innovation, including the possibility of major changes or replacement with a more powerful alternative. Individual has definite ideas about the alternatives to the proposed or existing form of the innovation.

5 COLLABORATION: The focus is on coordination and cooperation with others regarding use of the innovation.

4 CONSEQUENCE: Attention focuses on impact of the innovation on students in his/her immediate sphere of influence. The focus is on relevance of the innovation for students, evaluation of student outcomes, including performance and competencies, and changes needed to increase student outcomes.

3 MANAGEMENT: Attention is focused on the processes and tasks of using the innovation and the best use of information and resources. Issues related to efficiency, organizing, managing, scheduling, and time demands are utmost.

2 PERSONAL: Individual is uncertain about the demands of the innovation, his/her inadequacy to meet those demands, and his/her role with the innovation. This includes analysis of his/her role in relation to the reward structure of the organization, decision-making and consideration of potential conflicts with existing structures or personal commitment. Financial or status implications of the program for self and colleagues may also be reflected.

1 INFORMATIONAL: A general awareness of the innovation and interest in learning more detail about it is indicated. The person seems to be unworried about himself/herself in relation to the innovation. He/she is interested in substantive aspects of the innovation in a selfless manner such as characteristics, effects, and requirements for use.

0 AWARENESS: Little concern about or involvement with the innovation is indicated.

APPENDIX B

INFORMED CONSENT STATEMENT
Dear INTIME Faculty,

You have expressed interest in participating in a study that focuses on assessing the shift in your professional practice as a result of implementing the INTIME project into the curriculum. The main purpose of the study is to determine specific aspects that rendered the project effective, as perceived by each and every one of its participants.

In this light, the researcher will contact you via telephone for a set of interviews designed to encourage you to self-reflect on your use of the INTIME project in the classroom. Thus the researcher will be able to identify the facilitating factors as well as the hindrances in the process of implementing the project. After each interviewing session, the researcher will transcribe the phone conversation, and send you a copy of the transcription for your review. Based on your input, he will be able to structure the questions for the subsequent interviewing sessions. The whole process will be terminated once redundancy/saturation of information will be reached. At this point in time, the researcher will start looking for commonalities among the different accounts of how INTIME was used in the classroom at the college level. Results and findings will be shared with participating subjects. Confidentiality will be ensured by assigning fake Ids to all participants in the study.

The potential benefits to the subjects as well as to other educators interested in possible ways to use technology in the college-level classroom stem from findings that state facilitating factors as well as hindrances in implementing new educational computer applications. Findings will be highly relevant mainly to the INTIME participants, as they are to reflect their perceptions of the effectiveness of the project. However, these data can lend themselves to any prospective attempts to replicate INTIME under comparable circumstances.
The records of the phone conversations will remain strictly confidential, as all data that could indicate the true identity of the respondent will not be revealed. Fake IDs will be assigned to all participants in the study. Any reference to their workplace will not be stated as such.

You have been selected to participate in the study based on your voluntary agreement.

You may discontinue participation in the study at any time without penalty or loss of benefits to which you may be entitled. In addition, refusal to participate will involve no penalty or loss of benefits to which you may be otherwise entitled.

In case you have any questions related to the proposed procedure, please feel free to contact me (Marius Boboc, SEC 642, University of Northern Iowa, Cedar Falls, IA 50613, 319-273-2626). You may also contact my advisor Dr. William P. Callahan at 319-2273-2719) or the Office of the Human Subjects Coordinator, University of Northern Iowa, Cedar Falls, IA 50613, 319-273-2748 for answers to questions about the research and about the rights of research subjects.

Thank you for your participation in the study.

Sincerely,

Marius Boboc
Ed.D. Candidate
APPENDIX C

LETTER OF ACCEPTANCE
I, _____________________, give permission to Marius Boboc and the University of Northern Iowa’s College of Education to interview me as a participant in the INTIME project that has been selected to be involved in a study focusing on my perceptions of how my practice has changed over time due to the project in question.

I understand that these interviews may be used to assess and promote best practices in teacher education. I give permission to Marius Boboc and the University of Northern Iowa’s College of Education to use these data for educational purposes. This includes and is limited to integration into a doctoral thesis that Marius Boboc is writing. I also understand that in reporting the data collected I will be assigned a fake ID, and my real identity will always be kept confidential in order to protect my privacy.

By signing this form, I agree to give Marius Boboc and the University of Northern Iowa’s College of Education all rights to the materials collected. In addition, I am fully aware of the nature and extent of my participation in this project as stated above and the possible risks arising from it. I hereby agree to participate in this project. I acknowledge that I have received a copy of this consent statement.

Signature of Subject or Responsible Agent __________________________ Date __________

Printed Name of Subject __________________________________________

Signature of Investigator __________________________________________
APPENDIX D

INTERVIEW PROTOCOL
Preliminary Questions

1. For how many semesters have you been using the INTIME Project in your methods classes?

2. Are you currently using the INTIME Project?

3. If the answer to the question above is no, please provide a reason.

4. Did you have to change your initial plan related to the number of semesters you thought you would use INTIME in your classroom?

Set I of Interview Statements (First Interview)

1. Describe your teaching practice before implementing INTIME into your classroom.

2. Describe your teaching practice now that you have been using INTIME in your classroom for [a given number of] semester(s).

3. Share some of the transitions/adjustments to your teaching practice you had to make to accommodate the INTIME project into the methods classes you taught.

4. Describe some of the problems you encountered during the implementation of the INTIME Project into your methods classes.

5. Share some of the achievements that you noticed as a result of using INTIME (both on your part as a methods professor as well as on the part of your students).

6. In case you have collected formal or informal evidence of improved student learning as a result of using INTIME in the classroom, share some of the information.

Set II of Interview Questions (First Interview)

Thus far we have collected ... sets of Stages of Concern Questionnaire that you completed since the beginning of the project. I would like you to share with me the perception of how your concerns related to your use of the INTIME Project changed over time. Therefore, I will mention each of the seven different concern stages by briefly defining them, as stated by the authors of the instrument. In case you have...
anything to comment in relation to the particular stage of concern, please feel free to do so. However, if there is nothing you would have to say at this moment, please say so and we will move right along.

1. The first stage, awareness, focuses on your concern about or involvement with the innovation. By the way, from now on, by innovation I mean the INTIME Project.

2. The second stage, informational, relates to the general awareness of the innovation and interest in learning more about it. Under these circumstances, at any given time, did you feel that you had been provided with enough information about the INTIME Project or you wished you knew more about it?

3. The third stage of concern on the questionnaire, personal, takes into account the role and demands the innovation, that is the INTIME Project, entails. In other words, how did you feel while using INTIME in the classroom: comfortable, not sure what to do, etc.?

4. The next stage focuses on any management issues that you may have had to solve during the implementation of INTIME. Could you elaborate on the topic?

5. The next stage of concern deals with the impact of the innovation, that is the INTIME Project, on your students. Were you ever concerned about it? If so, did your concern change over time?

6. Have you been able to collaborate in using and possibly disseminating the INTIME Project?

7. Finally, based on your use of the project, were you able to come up with alternatives to the existing form of the innovation?

Set III of Interview Questions (Second Interview)

1. What do you think you could have done differently to improve student learning even better?

2. What do you think INTIME could have done differently to make your use of it even better?

3. Please share something about the background of your students in an attempt to assess how INTIME met their various learning needs.

4. Thinking comparatively before INTIME and after INTIME, what do you think would be the major achievement/change in terms of your professional practice?
5. If you were given the decisional power to continue the project or replicate it under comparable circumstances, how would you go about it? Would you change anything? Would you keep it as it is? Would you have a different target audience in mind?

6. Under these circumstances, based on all that you have shared with me, how would you present/describe INTIME in a few words?
APPENDIX E

LIST OF DOCTORAL DISSERTATIONS THAT USED IN-DEPTH INTERVIEWING AS DATA COLLECTION METHOD


Hauser, L. A. (2002). Data management practices used by original beginning teacher support and assessment programs (BTSA) to provide feedback about program quality/effectiveness and guide future program decisions. *Dissertation Abstracts International, 62/12, 4009.* (UMI 3036899)


Stanek, M. E. Polishing the virtual classroom: Attributes and factors of formative program evaluation that lead to program improvement. *Dissertation Abstracts International, 62/07*, 2309. (UMI 3020721)


APPENDIX F

TECHNOLOGY AS FACILITATOR OF QUALITY EDUCATION MATRIX