Technology for Reflection and Assessment Coalition

2001-02 Evaluation Report

Phase One-Year 1: Pilot Year

Prepared by

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Submitted to

WSE PT3 Grant
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Ron Coley & Beth Allred

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Introduction

This evaluation report addresses the Technology for Reflection and Assessment Coalition grant, hereafter referred to as “the PT3 project.” This grant was awarded in July 2001 to the Watson School of Education (WSE), University of North Carolina at Wilmington (UNCW), and is one of the “Preparing Tomorrow’s Teachers to Use Technology” (PT3) implementation grant projects funded by the U.S. Department of Education.

The UNCW-WSE PT3 grant “Technology for Reflection and Assessment Coalition” was designed and developed to improve assessment of student learning as a way to impact the professional development of pre-service teachers, university faculty, and faculty in public schools. The grant aimed to accomplish four major goals over a three-year period.

1. Reexamine, reform and establish curriculum, instruction, and applications for use of technologies for formative and summative P-16 classroom assessment.
2. Continue development of the teacher education program design and coursework to infuse technology applications for classroom assessment.
3. Expand technology applications for summative and formative classroom assessment to include additional teacher preparation programs areas, subject areas, and additional application settings.
4. Integration of technologies for formative and summative K-16 classroom assessment throughout all elements of the preparation program for elementary, middle, and secondary pre-service teachers.

In order to achieve the above goals and in collaboration with partners from UNCW (Information Technology System Division; Professional Development System), public schools (Duplin county, New Hanover county, and Brunswick county schools), businesses (Illuminations-Marco Polo Internet Project/MCI WorldCom Foundation), and professional organizations (South Eastern Vision for Education (SERVE), North Carolina Department of Public Instruction, and North Carolina Board of Education), the project focused on training students and faculty to utilize the latest technologies to develop effective classroom formative and summative practices over a three year period with specific goals and performance outcomes for each year.

As a pilot year, phase one (year 1) emphasized assessment of current program curriculum, development and implementation of curricular responses for teacher preparation courses in elementary and secondary education. It also attempted to pilot test pre-service students’ application of technology-based assessment strategies in the K-12 classroom. Table 1 provides a summary of the project goals, performance outcomes, intermediate goals, and implementation process for Phase One (year 1, 2001-2002) of the project.
Project Evaluation Plan

Given the project goals, performance outcomes, project design and implementation plan, the evaluation of the project was designed to answer the following research questions:

- What did the project do to improve the teacher education student performance?
- How well was the project implemented?
- How well were the needs reduced?
- How successful was the project in achieving its goals; and were there any unanticipated outcomes appearing?

To answer the above questions a comprehensive evaluation plan was developed to assess the process (implementation) and the outcomes of the project. While project goals and performance outcomes were used to identify performance indicators, types, and sources of the data, the project implementation plan was used to develop a monitoring process and a tracking system for the evaluation of the program implementation.

Teacher education faculty and partnership teachers in public schools, teacher education students, student interns, students in public schools who were targeted for each phase of the project, combined with documents, reports and students’ products were identified as primary sources of the data for the evaluation of the project. Several instruments, such as surveys, interview protocols, evaluation forms, and document analysis checklists were developed or adopted to assist in gathering both quantitative and qualitative data from the identified sources (see the Supporting Materials for the copies of the instruments). The instruments were designed and conducted several times to explore if the program was beginning to produce desired results, as well as to obtain information on implementation of the program.

Evaluation Results: Project Phase One (Year 1), Pilot Year

Table 2 summarizes the project evaluation plan for Phase One of the project. As Table 1 shows, in addition to collecting baseline data to determine the current use of proper assessment strategies and the utilization of technology for the assessment of student learning, in year 1, the evaluation plan was to gather information using multiple measures from multiple sources to determine how close the project was to achieving its goals and benchmarks for its phase one. Table 3 summarizes evaluation methods for phase one of the project.

Baseline Data

In order to identify the current technology-related skill level and training needs of faculty members, several sources were used to gather baseline data. Secondary education faculty members and elementary education faculty members teaching mathematics and communications skills methods courses were interviewed (see the supporting materials for a copy of the interview protocol) at the beginning of Fall 2001 before the project began its implementation of phase one. All secondary education students and all elementary education
students were also surveyed (see the Supporting Materials for a copy of the survey) in the Fall 2001 before the project began its implementation of phase one. In addition to the interview and survey data, course syllabi for all secondary education methods courses and elementary mathematics and communication skills methods courses were gathered and further analyzed for the current use of assessment strategies and utilization of technology for assessment of student learning (see the Supporting Materials for the analysis checklist). Moreover, an existing sample of students’ lesson plans was also reviewed for evidence of current applications of assessment strategies and technology use (see the Supporting Materials for the analysis checklist).

The Results

The analysis of the baseline data on the current use of assessment strategies in secondary education methods courses and elementary education mathematics and communication skills courses showed that:

- Overall, methods faculty spent between 10 to 30 percent of their methods courses on assessment issues. 75 percent of faculty teaching elementary and middle grades communication skills courses used 10 percent of their methods courses on assessment issues, while 100 percent of faculty teaching elementary or middle grade math courses and 100 percent of faculty teaching secondary methods courses used 30 percent of their methods courses on assessment issues.

- Analysis of faculty syllabi confirmed the above-mentioned results. The analysis of the course syllabi for elementary and middle grade math courses indicated that assessment of student learning was emphasized in those courses by requiring students to design assessment plans, review standards on assessments, design diagnostic assessments and apply curriculum assessments during field experience. The analysis of the course syllabi for elementary and middle grade communication skills revealed that these courses also emphasized assessment of student learning to a lesser degree by requiring students to plan for formal and informal observations and assessment of learners’ progress. The degree and the frequency of this use varied depending on the course content and the faculty teaching style.

- Analysis of the course syllabi for secondary education methods courses also confirmed that secondary education methods courses addressed assessment issues by requiring students to engage in conducting self-assessments, formal assessments, different forms of oral and written assessments, and some alternative assessments such as portfolios.

- In addition, faculty interviews showed that 100 percent of faculty members thought assessment was an essential element in their methods courses. This result was consistent with the analysis of faculty syllabi and students’ sample lesson plans where assessment was emphasized.

The analysis of baseline data on the utilization of technology for the assessment of student learning showed that:
50 percent of the faculty interviewed spent between none to 25 percent of their methods courses on technology. The remaining 50 percent of the faculty reported that they spent about 50 percent of their course time on technology. The usage of technology included technology-based assignments, finding lesson plans on the Internet, searching the DPI site, and using graphing calculators.

60 percent of the faculty interviewed reported that they were using from 0 to 5 percent of their methods courses on usage of technology for assessment purposes. 10 percent reported that they used from 10 to 20 percent of their courses on technology for assessment, and 20 percent reported using 30 to 50 percent on usage of technology for assessments.

Faculty interviews also showed that while about 60 percent of the faculty thought technology was essential for the assessment of student learning, more than 40 percent of the faculty thought technology was not a critical element for assessment of instruction. Similar results were found when faculty was asked, “To what extent do you think technology can be used for assessment purposes?” About 40 percent of faculty thought technology must be used for different purposes. Another 40 percent did not think technology was important for assessment. The remaining 20 percent thought they did not know enough about technology for assessment to make a proper judgment.

The analysis of the baseline data on the faculty members’ level of proficiency with the usage of different technologies (e.g., spreadsheets, computerized scoring, use of hand-held computers, use of electronic portfolio, use of database, use of word processing, use of web pages, etc.) for assessment showed that:

- 100 percent of faculty did not feel proficient in streaming video with narration to be used in electronic portfolio
- 80 percent of faculty did not feel proficient in the use of electronic portfolio
- 80 percent of faculty did not feel proficient in the use of web pages
- 70 percent of faculty did not feel proficient in the use of hand-held computers (PDAs)
- 50 percent of faculty did not feel proficient in the use of database for creating student profile

The analysis also showed that some faculty members might also need advanced training in the following areas:

- Audio and video recording
- Creating CDs and other storage files
- Use of spreadsheets
- Use of computerized scoring
The analysis of baseline data for teacher education students showed the following results. The Elementary student survey showed that:

- 44 percent of students frequently used technology in math methods courses
- 35 percent of students frequently used technology in communication skills (reading & language arts) methods courses
- 47 percent of students frequently used technology to complete assignments in math methods courses
- 58 percent of students frequently used technology to complete assignments in communication skills (reading & language arts) methods courses

The secondary student survey showed that:

- 100 percent of students frequently used technology in math methods courses
- 71 percent of students frequently used technology in English methods courses
- 33 percent of students frequently used technology in science courses
- 23 percent of students frequently used technology in social studies methods courses

Furthermore, the secondary student survey showed that:

- 93 percent of students frequently used technology to complete assignments in English methods course
- 80 percent of students frequently used technology to complete assignments in math methods courses
- 69 percent of students frequently used technology to complete assignments in social studies methods courses
- 68 percent of students frequently used technology to complete assignments in science methods courses

The analysis of the baseline data on the students’ level of proficiency with the usage of different technologies (e.g., spreadsheets, computerized scoring, use of hand-held computers, use of electronic portfolio, use of database, use of word processing, use of web pages, etc.) for assessment purposes showed the following results for secondary and elementary education students. The results for secondary education students indicated that:

- 57 percent of secondary English students did not feel proficient in the use of hand-held computers (PDAs) for assessment
- 77 percent of secondary social studies students did not feel proficient in the use of hand-held computers (PDAs) for assessment
- 50 percent of secondary English students did not use or know how to use senior projects.
- 85 percent of secondary social studies students did not feel proficient in the use senior projects
- 40 percent of secondary math students did not feel proficient in the use of grading software
43 percent of secondary English students did not feel proficient in the use of grading software
62 percent of secondary social studies students did not feel proficient in the use of grading software
67 percent of secondary social studies students did not feel proficient in the use of grading software

The results for elementary education students showed that:

- 83 percent of students in math methods courses and 96 percent of students in communication skills courses did not feel proficient in the use of hand-held computers for assessment
- 74 percent of students in math methods courses and 70 percent of students in communication skills courses did not feel proficient in the use of video/VCR for assessment purposes
- 52 percent students in math methods courses and 67 percent of students in communication skills courses did not feel proficient in the use of spreadsheets for assessment purposes
- 62 percent students in math methods courses and 73 percent of students in communication skills courses did not feel proficient in the use of grading software for assessment purposes
- 52 percent students in math methods courses and 48 percent of students in communication skills courses did not feel proficient in the use of Internet for assessment purposes

The above baseline results were discussed with the project coordinators and they were used to design the implementation plan for the year one.
Evaluation Results

Phase One (Year 1): Pilot Year

The following section summarizes the evaluation results of Phase One of the project. The results are organized by the evaluation questions.

What Did the Project Do to Improve the Teacher Education Students’ Performance? How Well Was the Project Able to Address and Reduce the Needs?

The following table (Table 4) summarizes the project expected performance outcomes for secondary teacher education students, needs and gaps in knowledge, skills, and the attitudes of secondary teacher education students, the strategies used to achieve the performance outcomes, and the progress made toward the achievement of the goals (salient results).

Table 4: Secondary Education Students

<table>
<thead>
<tr>
<th>Expected Performance Outcomes</th>
<th>Major Needs or Gaps in knowledge, Skills, and Attitudes of Secondary Teacher Education Students</th>
<th>Strategies Employed to Achieve the Expected Outcomes or Fill the Gaps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary teacher education students will: ▪ Demonstrate the knowledge, skills and attitude necessary for effective assessment of student learning. ▪ Show awareness and skills in appropriate usage of technology for formative and summative evaluation of student learning. ▪ Show application of technology for classroom assessment in clinical sites during methods courses’ fieldwork and internship.</td>
<td>▪ 77 percent of secondary social studies students and 57 percent of secondary English students did not feel proficient in the use of handheld computers for assessment ▪ 85 percent of social studies students and 5 percent of secondary English students did not use or know how to use senior projects. ▪ 62 percent of secondary social studies majors, 43 percent of secondary English students and 40 percent of secondary math students did not feel proficient in the use of grading software.</td>
<td>▪ Provided professional development opportunities for secondary and elementary methods faculty in order to help faculty model utilizing the latest technologies for development of effective classroom formative and summative assessment in their courses. ▪ Provided access to hand-held computers and other technological tools in both methods classes and during student teaching. ▪ Provided training in the understanding of senior project, electronic portfolio, online search and use of hand-held computer for secondary teacher education students.</td>
</tr>
</tbody>
</table>

Progress Made toward Achievement of Goals

<table>
<thead>
<tr>
<th>Salient Quantitative Results: Secondary Teacher Education Interns</th>
</tr>
</thead>
<tbody>
<tr>
<td>▪ 96.3 percent of interns rated their skills with using technology as either expert (13.0 percent), advanced (46.3 percent), or intermediate (37 percent).</td>
</tr>
<tr>
<td>▪ 74 percent of interns indicated that they often used spreadsheets to record and manage student assessment results. (Baseline data had shown that 94.3 percent of interns rated their skills in using spreadsheet from excellent to adequate).</td>
</tr>
<tr>
<td>▪ 75.9 percent of interns indicated that they often used grade book to record and manage student assessment results. (Baseline data had shown that only 48.6 percent of students used or knew how to use grading software. Progress is shown.).</td>
</tr>
<tr>
<td>▪ 87.0 percent of interns indicated that they never used hand-held computers to record and manage student</td>
</tr>
</tbody>
</table>
assessment results (13 percent used). (Baseline data had shown that about 40 percent of interns rated their skills with hand-held computer from excellent to adequate. Compared with baseline data, no progress is shown. The result suggests that 27 percent, who knew how to use the device, did not have opportunity to practice it.)

- 94.4 percent of interns indicated that they never used hand-held computers to administer online testing. (No progress is shown.)
- 66.7 percent of interns indicated that they often (31.5 percent) or occasionally (35.2 percent) used computer-based assignments to assess student learning. (Baseline data had shown that 100 percent of students used or knew how to use computers. The result suggests that 33.3 percent did not practice their skills or did not know how to use their skills for assessment purposes.)
- 63 percent of interns used computer technology to develop tests and other assessment tools and rubrics. (Baseline data had shown that 100 percent of students used or knew how to use computers. The result suggests that 37 percent did not practice their skills or did not know how to use their skills for assessment purposes.)
- 42.6 percent of interns indicated that they often (25.9 percent) or occasionally (16.7 percent) used data base software to create student profile. (Baseline data had shown that 100 percent of students used or knew how to use database software. The results suggest that 57.4 percent did not practice their skills or did not know how to use their skills for assessment purposes.)
- 42.6 percent of interns indicated that they occasionally used computer technology to individualize instruction for students who needed remediation. (Baseline data had shown that 100 percent of students used or knew how to use computers. The results suggest that 57.4 percent did not practice their skills or did not know how to use computers to individualize instruction.)
- 77.7 percent of interns indicated that they often (37.0 percent) or occasionally (40.7 percent) used computer technology to improve interaction in their classrooms. (Baseline data had shown that 100 percent of students used or knew how to use computers. The results suggest that 22.3 percent did not practice their skill or did not know how to use computers for assessment purposes.)

On the scale of 1=low to 3=high, interns’ scored 2.8 in their level of agreement with statements that measured their comfort toward using technology for assessment suggesting that interns felt very comfortable using technology for assessment. (See the Supporting Materials for summary charts or graphs.)

On the scale of 1=low to 4=high, interns scored between 3.2 to 3.7 in their level of agreement with statements that measured their attitude toward the use of technology for assessment of student learning. The results suggest that interns had a very positive attitude toward the use of technology for assessment of student learning. (See the Supporting Materials for summary charts or graphs.)

Interns saw the following factors as major barriers in the integration of technology in their teaching:
- Not enough software available in schools (48 percent)
- Lack or limited access to computers at schools (44.4 percent)

Interns saw the following factors as minor barriers in the integration of technology in their teaching:
- Lack of knowledge about technology (35.2 percent)
- Lack of knowledge about ways to integrate technology into curriculum (40.7 percent)
- Technology-integrated curriculum projects require too much preparation (44.4 percent)
- Not enough time in class to implement technology-based lessons (44.4 percent)

The results suggest that lack of access and software are major problems in schools. Also, while lack of knowledge or ways to integrate technology plays a minor role, it is still an obstacle for some interns.

Qualitative Results

Consistent with the quantitative results, the qualitative analysis of faculty supervisors’ observation notes and students’ sample lesson plans; suggested that students often used the following technologies during their instruction or in preparation for teaching:

- Presentation software (e.g., Power Point)
- Internet search
- Internet resources
The analysis of faculty supervisors’ observation notes, students’ sample lesson plans, and responses to open-ended questions also suggested that secondary student interns required their students to either use the following technologies during instruction or show their skills of using them in their assignments.

**Required to use during Instruction**

- Overhead projector (63.6 percent)
- TV/VCR (100 percent)
- Computers (63.6 percent)
- Scanner (27.3 percent)
- Digital Camera (18.2 percent)

**Required to demonstrate skills of using**

- Word processing (90.9 percent)
- Locating information/resources on the Internet (90.9 percent)
- Presentation software (45.5 percent)

Following is a sample excerpts from students’ responses and faculty supervisors’ observations notes:

*Students’ responses to the question*: Describe the most successful use of technology either in lesson planning or in the classroom. What made it interesting?

“Using the internet for planning lessons”, “Power Points – interactive, something for students to look at to keep them interested during lecture”, “Riverdeep.net – It was very interesting and new way to teach a lesson”, “Holocaust website to locate and respond to testimonials of survivors about their experiences”, “Power Point was useful because it incorporated sight and sound which is beneficial to some students”, “Power Point”, “Technology was readily available to me pretty much 24/7. I had media center staff and the head of technology to help me whenever I needed”, “I enjoyed learning how to use the media control of the VCR & TV through the desktop computer”, “It was word processing/desktop publishing. It gave the students an opportunity to have ownership of their work.”

*Excerpts from faculty observation notes*

“…You are making good use of technology with the PowerPoint. You are teaching the concepts and helping students organize the information (graphic organizer).” “…Good, PowerPoint notes-text is large, clear, and good use of color.” “…You are also experimenting with technology in seeing what resources are available online.”

The following graphs and tables provide a visual summary of the comparative analysis of the data on the secondary interns’ use of technology for assessment purposes across different subject areas.
Technologies often used when planning, developing, & conducting student assessment

Computer-based strategies used when planning, developing, & conducting assessment of student learning
Major barrier to computer integration

- Access = Limited access to computers
- Software = Not enough software available
- Knowledge = Lack of knowledge about technology
- Ways = Lack of knowledge about ways to integrate technology into the curriculum
- Lackassign = Course assignment do not require technology
- Lackcourse = Lack of technology accessibility in courses
- Time = Too much materials to cover
- Mentor = Lack of mentoring to help
- Preparation = Technology-integrated projects require too much preparation
- Classtime = There isn’t enough time in class

Table 5: Summary of mean scores across different subject areas on student interns’ level of comfort with the technology for assessment

<table>
<thead>
<tr>
<th>Question: Please indicate your level of agreement with the following statements about your use of technology.</th>
<th>N</th>
<th>English</th>
<th>Social Studies</th>
<th>Math</th>
<th>Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>When designing lessons, I included educational technologies when appropriate.</td>
<td>53</td>
<td>2.4</td>
<td>2.9</td>
<td>2.6</td>
<td>3.0</td>
</tr>
<tr>
<td>I was comfortable planning for class sessions that involved student use of technology during instruction.</td>
<td>51</td>
<td>2.4</td>
<td>2.9</td>
<td>2.6</td>
<td>3.0</td>
</tr>
<tr>
<td>I can identify strategies for assessing student learning when technology is used as a support to delivery system.</td>
<td>51</td>
<td>2.5</td>
<td>2.9</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>I used technology to enhance learning in my classroom.</td>
<td>51</td>
<td>2.6</td>
<td>2.8</td>
<td>2.6</td>
<td>3.0</td>
</tr>
<tr>
<td>I know strategies for using technologies to individualize instruction and to meet the needs of diverse learners.</td>
<td>51</td>
<td>2.5</td>
<td>2.9</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>I am comfortable teaching with technology and have adequate management strategies for technology.</td>
<td>50</td>
<td>2.6</td>
<td>3.0</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>I used technology to assess and analyze student progress.</td>
<td>52</td>
<td>2.6</td>
<td>3.0</td>
<td>3.0</td>
<td>2.8</td>
</tr>
<tr>
<td>I have effective strategies for assessing student-supported technology work.</td>
<td>52</td>
<td>2.6</td>
<td>2.9</td>
<td>3.0</td>
<td>3.0</td>
</tr>
</tbody>
</table>

Maximum score=3.0; Minimum score=1.0
### Table 6: Summary of mean scores across different subject areas on student interns’ attitude toward the usage of technology for assessment

<table>
<thead>
<tr>
<th>Question: Given your internship (student teaching) experience, please rate the following statements</th>
<th>N</th>
<th>English</th>
<th>Social Studies</th>
<th>Math</th>
<th>Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>I support the use of technology in the classroom.</td>
<td>53</td>
<td>3.8</td>
<td>3.9</td>
<td>3.6</td>
<td>3.7</td>
</tr>
<tr>
<td>A variety of technologies are important for student learning.</td>
<td>52</td>
<td>3.6</td>
<td>3.8</td>
<td>3.4</td>
<td>3.5</td>
</tr>
<tr>
<td>Incorporating technology into instruction helps students learn.</td>
<td>52</td>
<td>3.5</td>
<td>3.8</td>
<td>3.4</td>
<td>3.8</td>
</tr>
<tr>
<td>Technology skills are as important as content knowledge.</td>
<td>52</td>
<td>3.3</td>
<td>3.2</td>
<td>2.6</td>
<td>2.8</td>
</tr>
<tr>
<td>Technology use is a high priority for students although they still have many other needs.</td>
<td>52</td>
<td>3.5</td>
<td>3.2</td>
<td>3.2</td>
<td>3.2</td>
</tr>
<tr>
<td>Student motivation increases when technology is integrated into the curriculum.</td>
<td>51</td>
<td>3.4</td>
<td>3.5</td>
<td>3.2</td>
<td>3.2</td>
</tr>
<tr>
<td>Teaching students how to use technology is my job.</td>
<td>52</td>
<td>2.7</td>
<td>3.0</td>
<td>2.6</td>
<td>2.5</td>
</tr>
<tr>
<td>There is enough time to incorporate technology into the curriculum.</td>
<td>52</td>
<td>2.9</td>
<td>3.0</td>
<td>2.2</td>
<td>2.1</td>
</tr>
<tr>
<td>Technology helps teachers do things with their classes that they would not be able to do without it.</td>
<td>52</td>
<td>3.4</td>
<td>3.7</td>
<td>3.6</td>
<td>2.8</td>
</tr>
<tr>
<td>Knowledge about technology will improve my teaching.</td>
<td>51</td>
<td>3.5</td>
<td>3.9</td>
<td>3.8</td>
<td>3.0</td>
</tr>
<tr>
<td>Technology might enhance the interactions between teachers and students.</td>
<td>52</td>
<td>3.6</td>
<td>3.6</td>
<td>3.6</td>
<td>3.1</td>
</tr>
<tr>
<td>Technology facilitates the use of a wide variety of instructional strategies designed to maximize learning.</td>
<td>52</td>
<td>3.6</td>
<td>3.7</td>
<td>3.6</td>
<td>3.2</td>
</tr>
<tr>
<td>Valid N (list wise)</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Maximum score=4.0
Minimum score=1.0

The following table (Table 7) summarizes the project’s expected performance outcomes for elementary teacher education students, identified needs and gaps in knowledge, skills, and attitudes of elementary teacher education students, and the strategies used to achieve the performance outcomes. Since the elementary teacher education students were trained during spring of 2002 and will be expected to do their internship during fall of 2002, no outcome data was available at this time. The results of the spring surveys, completed by elementary interns, will be used as a baseline data for the next evaluation report. (See the Supporting Materials for the detailed results of the spring surveys.)
## Table 7: Elementary Teacher Education Students

<table>
<thead>
<tr>
<th>Expected Performance Outcomes By Fall 2002</th>
<th>Major Needs or Gaps in knowledge, Skills, and Attitudes of Elementary Teacher Education Students</th>
<th>Strategies Employed to Achieve the Expected Outcomes</th>
</tr>
</thead>
</table>
| Elementary teacher education students will: | ▪ Demonstrate the knowledge, skills and attitude necessary for effective assessment of student learning.  
▪ Show awareness and skills in appropriate usage of technology for formative and summative evaluation of student learning.  
▪ Show application of technology for classroom assessment in clinical sites during methods courses’ fieldwork and internship. | ▪ Provided professional development opportunities for elementary methods faculty in order to help faculty model utilizing the latest technologies for development of effective classroom formative and summative assessment in their courses. (Spring 2002)  
▪ Provided access to hand-held computers and other technological tools in methods classes. (Spring 2002)  
▪ Provided training in the areas of classroom assessment strategies for math and communications skills, use of palm pilots and other technologies for improvement of assessment of student learning for elementary education students. (Spring 2002) |
|                                            | ▪ 83 percent of students in math methods courses and 96 percent of students in communication skills courses did not feel proficient in the use of hand-held computers for assessment  
▪ 74 percent of students in math methods courses and 70 percent of students in communication skills courses did not feel proficient in the use of video/VCR for assessment purposes  
▪ 52 percent of students in math methods courses and 67 percent of students in communication skills courses did not feel proficient in the use of spreadsheets for assessment purposes  
▪ 62 percent of students in math methods courses and 73 percent of students in communication skills courses did not feel proficient in the use of grading software for assessment purposes  
▪ 52 percent of students in math methods courses and 48 percent of students in communication skills courses did not feel proficient in the use of Internet for assessment purposes | |

### How Well Was The Program Implemented?

**Project Implementation Goals and Plan**

As Table 2 shows, in order to achieve its performance outcomes, the project identified the following intermediate goals for phase one of the project.

- Train secondary faculty in “Senior Project” and the applications of hand held computer technology (e.g., Jornadas) for assessment.
- Train secondary English interns in senior project and the applications of hand-held computer technology for assessment.
- Train elementary teacher education faculty (math and communication skills) in technology applications for K-2 assessment for mathematics and communication.
- Train elementary education students (math and communication skills) in K-2 assessment and the use of hand held computers (e.g., Palm Pilot).

The above intermediate goals and the results of the analysis of baseline data were used to develop the following implementation plan for fall 2001 and spring 2002.
Fall 2001
Secondary faculty and student training workshops
- Senior project overview
- Senior Project: Online Research & Presentation using Jornada

Technology tools
- A set of Jornada (hand-held computers) will be available to be used by trainers and secondary methods faculty

Spring 2002
Secondary faculty and student training workshops
- Training on Senior Project Digital Portfolio

Elementary faculty and student training workshops
- Principles of Classroom Assessment
- Elementary Assessment in Mathematics and communication

Other professional development training opportunities for faculty
- Lectora Web Development Training I & II
- Palm Plot Training I & II
- Challenges and opportunities of web
- Designing accessible and usable online tools

Technology tools
- Faculty of WSE attend Palm Pilot training will receive a Palm hand-held computer.
- Faculty of WSE attend Lectora training will receive a free copy of Lectora software.

Other activities
- A set of 25 hand-held computers (Jornadas) will be given to a senior English class in the New Hanover High School to be used for developing senior projects.
- Faculty will be supported to attend workshops and training sessions provided by various national and international organizations in the use of technology for assessment.
- Faculty who attend Palm Pilot training workshops will receive a Palm Pilot
- New software will be purchased and made available for the faculty use.
- Individual faculty initiatives on applications of technology for professional development will be supported.

Evaluation Plan

Several sources of data were used to evaluate how well the project was implemented.

- Evaluation of each training workshop for its effectiveness and quality;
- Attendance of the targeted faculty members and students in professional development workshops;
- Record of the strategies used to encourage faculty members and students to attend the training workshops;
- Faculty interviews about the usefulness of the professional development workshops; and
Faculty survey about the use of skills learned in the professional development workshops.

The following section summarizes the results on how well the project was implemented during its first year.

**Evaluation Of Training Workshops**

As the following graph illustrates, the analysis of the evaluation of training workshops shows that faculty and students, who participated in the workshops rated the quality of the workshops as high to excellent. They also thought the workshops were effective and contributed to their professional practice. (See the Supporting Materials—Summary Results of Evaluation of Training Workshops.)

**Evaluation of Training Workshops**

![Graph showing overall quality of training workshops]

W1 = Senior project overview  
W2 = Online research with hand-held computers  
W3 = Lectroa web development software training I  
W5 = Electronic portfolio with hand-held computer  
W6 = Assessment in math and communication  
W7 = Palm pilot training I  
W8 = Challenges and opportunities for web-based courses  
W9 = Palm pilot training II  
W10 = Designing accessible and usable online tools  
W11 = Lectroa web development software training II

The qualitative analysis of faculty interviews provided more information about the quality and usefulness of the professional development workshops for the targeted faculty
members (5 secondary, 2 middle, and 5 elementary math and communication) in the areas of needs. The analysis of interviews with the secondary methods faculty suggested that the three workshops that were specifically provided for secondary faculty (Senior Project Overview, Online Research with Hand-held Computers, Electronic Portfolio with Hand-held Computer) did not seem to fully address the needs of the targeted faculty members. The following excerpts summarize faculty members’ views about the usefulness of each workshop.

**Workshop 1: Senior Project Overview**
“It was overlong; slow paced; probably could have been condensed into two hours. It made us more aware of what senior project is or isn’t” “It was interesting. I hadn’t really been aware of what New Hanover was doing and what other schools wanted to do. I thought it was helpful for people who had not used the Jornadas before or didn’t know much about the Internet.” “I don’t think the message was appropriate for the audience, nor the delivery. It was very lecture oriented, not enough interaction.”

**Workshop 2: Online Research with Hand-held Computers**
“It was more practical than the first session, but most attendees knew about search engines. If it had been able to show the resources available in the UNCW library, I think that would have been better training. We’ve been given permission to use those resources with senior project students, but they don’t yet know how to use those resources.” If the presenter or if someone helped the presenter to show what the university had to offer it would have been better.” “It was helpful for those without experience with Jornadas. The internet stuff was a little dated.” “I thought it was a pretty standard presentation. They initially did an inventory on the experience level of the participants, but they failed to adjust the presentation to the knowledge level of the audience. I felt that much of the time for many of the people was not used productively, because they had already acquired the skills being taught. And my interns have not involved in the training at all.” “There was no new learning for me. I think most of our interns can do online research.”

**Workshop 3: Electronic Portfolio with Hand-held Computers**
“I thought it was fairly useless. The person was very disorganized, did not show any practical product. It simply was not worthwhile.” “It was very informative since I didn’t attend the others” “It was basically a workshop on how to build a web-page. I thought it was inappropriate for the audience.” “I thought the material could have been condensed, and I was a little disappointed in the afternoon portion of that workshop, because we did not actually get to see a portfolio. I thought the workshop had great potential. I am interested in electronic portfolios.”

The analysis of interviews with the elementary methods faculty suggested that the two workshops that were specifically designed and delivered for targeted elementary faculty members (Principles of Classroom Assessment, Assessment in Math and Communication) seemed to address some of the needs of the targeted faculty. The following excerpts summarize faculty members’ views about the usefulness of each workshop.

**Workshop 1: Principles of Classroom Assessment**
“I needed to know information which goes well with the reading and class work we are doing in EDN 322.” “I needed more application and examples of actual assessment.” “I needed to know how technology can/will play a role in classroom assessment.” “I needed to know how to use the Palm-recorder.”

**Workshop 2: Assessment in Math and Communication**
“I thought they did a nice job with the information.” “I thought it was not geared to where our students were. We cover the K-2 assessment in class anyway. Many, if not most, of my students knew much of the materials presented.”

In addition to monitoring the importance of the quality and usefulness of the professional development workshops, the attendance of the faculty and students in the
workshops seemed to be an important factor in achieving the project intermediate and outcome goals. The analysis of the faculty and student attendance suggested that participation of secondary students, particularly English majors, who were targeted for the secondary workshops was lower compared with Elementary student participation in their respective workshops. Target faculty members’ participation in the designated workshops for secondary or elementary methods courses was better than their participation in other professional development workshops. Participation in professional workshops in which faculty received incentives (e.g., stipend, hardware or software) was better. See the following graph for a visual and comparative illustration of the faculty participation in the training workshops.

**Faculty & Student Participation Rate**

W1 = Senior project overview  
W2 = Online research with hand-held computers  
W3 = Lectroa web development software training I  
W4 = Principles of classroom assessment  
W5 = Electronic portfolio with hand-held computer  
W6 = Assessment in math and communication  
W7 = Palm pilot training I  
W8 = Challenges and opportunities for web-based courses  
W9 = Palm pilot training II  
W10 = Designing accessible and usable online tools  
W11 = Lectroa web development software training II
Changes In Faculty Technological Skills, Knowledge, And Attitude

As indicated earlier, the project provided a total of 11 professional training workshops to improve faculty knowledge, skills and attitude in usage of technologies for formative and summative assessment. Faculty was also given the opportunity to attend conferences with focus on technology training and was encouraged to participate in other workshops provided by the university system or other professional organizations related to the faculty content area. A set of Jornadas was made available to the secondary methods faculty. All targeted (both secondary and elementary) faculty members also received a Jornada and/or Palm pilot. A number of software was made available for faculty use. Individual faculty initiatives on the applications of technology for professional development were also supported to provide faculty with an opportunity to enhance their knowledge and skills in their own content or specialty areas. In addition to the above activities supported by the PT3 project, faculty members’ efforts to enhance their knowledge and skills in the area of applications of technologies were supported by other projects and grants during the 2001-2002 academic year.

Due to multiple factors that might have influenced faculty knowledge, skills and attitude, it will be difficult to form a causal relationship between the PT3 project’s activities and the changes in faculty knowledge, skills and attitude. However, given the data the following inferences can be made:

The analysis of the interview data gathered at the end of Spring 2002 showed that compared with fall 2001, faculty used more technology in their methods courses, felt more proficient (except for a few areas) in the usage of technologies for assessment (see the table below) and felt more positive and enthusiastic about the applications of technology for assessment.

Usage of Assessment and Technology for Assessment in Methods Courses

<table>
<thead>
<tr>
<th>What portion of the methods course you taught was spent on assessment?</th>
<th>Baseline Data</th>
<th>End of Spring 2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary methods faculty</td>
<td>75 percent said up to 10 percent or 4 hours of 42 hours</td>
<td>75 percent said up to 30 percent or 12 hours of 42 hours</td>
</tr>
<tr>
<td>Secondary and middle grade methods faculty</td>
<td>75 percent said up to 30 percent or 12 hours of 42 hours</td>
<td>28.6 percent said 10 percent (4 hrs); 28.6 percent said 20 percent (8 hrs); 42.9 said from 30 percent (12 hrs) to 50 percent (more than 16 hrs)</td>
</tr>
</tbody>
</table>

Interpretation: The results suggest that while elementary faculty seems to spend more time on assessment issues, secondary and middle grade faculty differ on the time they spend on assessment issues (from 10 percent to 50 percent).
What portion of the methods course you taught was spent using technology (particularly hand-held computers)

<table>
<thead>
<tr>
<th></th>
<th>Baseline Data</th>
<th>End of Spring 2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary methods faculty</td>
<td>NA</td>
<td>100 percent said virtually none using hand-held computers</td>
</tr>
<tr>
<td>Secondary and middle grade methods faculty</td>
<td>NA</td>
<td>85.6 percent said virtually none using hand-held computers</td>
</tr>
</tbody>
</table>

**Interpretation:** The results suggest that while faculty felt fairly proficient using hand-held computers they did not have an opportunity or did not know enough strategies to use them in their methods courses.

What portion of the methods course you taught was spent using technology for assessment

<table>
<thead>
<tr>
<th></th>
<th>Baseline Data</th>
<th>End of Spring 2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elementary methods faculty</td>
<td>75 percent said 0 to 5 percent, 25 percent said 30 to 50 percent</td>
<td>75 percent said 0 to 5 percent, 25 percent said 30 to 50 percent</td>
</tr>
<tr>
<td>Secondary and middle grade methods faculty</td>
<td>40 percent said 0 to 10 percent, 40 percent said 30 to 50 percent, 20 percent said 10 to 20 percent</td>
<td>42 percent said 0 to 10 percent, 28.6 percent said 10 to 20 percent, 28.6 percent said 30 to 50 percent</td>
</tr>
</tbody>
</table>

**Interpretation:** The results suggest that while faculty is more aware of technologies used for assessment they still do not use them in their courses.

### Proficiency in the Usage of Technology for Assessment

<table>
<thead>
<tr>
<th>How proficient are you in the usage of the following technologies for assessment purposes?</th>
<th>Mean Fall 01</th>
<th>Mean Sp. 02</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spreadsheets</td>
<td>3.2222</td>
<td>4.0000</td>
</tr>
<tr>
<td><strong>Computerized Scoring</strong></td>
<td>2.6667</td>
<td>2.4545</td>
</tr>
<tr>
<td>Use of hand-held computers</td>
<td>1.8889</td>
<td>3.6364</td>
</tr>
<tr>
<td>Use of electronic portfolio</td>
<td>3.2222</td>
<td>2.7273</td>
</tr>
<tr>
<td>Use of data base for creating student profiles</td>
<td>2.2222</td>
<td>3.0000</td>
</tr>
<tr>
<td>Use of word processing</td>
<td>4.3333</td>
<td>4.9091</td>
</tr>
<tr>
<td>Use of html pages</td>
<td>2.8889</td>
<td>4.1818</td>
</tr>
<tr>
<td>Use of emerging high-density storage media to keep copies of student work</td>
<td>2.2222</td>
<td>3.1818</td>
</tr>
<tr>
<td>Use of the process of acquiring and storing anecdotal observations of student learning</td>
<td>2.4444</td>
<td>3.4545</td>
</tr>
<tr>
<td>Written, audio or video records compared over time</td>
<td>3.8889</td>
<td>3.6364</td>
</tr>
<tr>
<td>Observation tools to support observational assessment</td>
<td>3.8889</td>
<td>3.7273</td>
</tr>
<tr>
<td>Using video tapes with or without computers</td>
<td>1.8889</td>
<td>4.1818</td>
</tr>
<tr>
<td><strong>Use of video editing or video streaming for electronic portfolio</strong></td>
<td>1.6667</td>
<td>1.7273</td>
</tr>
<tr>
<td>Use of computers as tutors</td>
<td>1.7778</td>
<td>3.2727</td>
</tr>
</tbody>
</table>

1 = Low proficiency
5 = High proficiency
Attitude toward Technology and Technology for Assessment

When asked “Compared with previous semesters (before Fall 2001), has your opinion about the importance of technology for the assessment of student learning changed?” Secondary faculty members thought they placed more emphasis on the use of technology for assessment, and they were aware of more strategies. The following are some excerpts from the faculty members’ comments:

“Actually, it has. I think there are tools we could use to improve our student teachers. For instance, with the Jornada you can do on the fly assessment of student writing. Or you could carry around a database or spreadsheet so you have a better idea of what kids are doing. If we could get Integrate on a Jornada, we could walk grading students. Imagine if we could use them during group work. The more we use those tools, the more the students see their value in assessment.”

“As a result of the Numina Project on campus in which the Jornadas are used in class, I’ve come to realize the potential for in-class assessment. The idea of putting them in the high schools is a good one. I see a lot of potential for them.”

“Yes. Somewhat, used technology for grading-research about students’ learning. Form completed by students.”

“I am more aware of how technology can assist in assessment, in attending some of the sessions with the Jornada and seeing how that can be used. I think my main limitation is that I haven’t actually seen this technology in a public school classroom. That would certainly help me if I were to see a teacher actually using it to see the benefits and limitations. At this point it appears to remain within the School of Education walls.”

“It can make it easier on the teachers if we learn to use technology rather than by hand. One of the things I would really like to see used is the SWAT software. I think that could be very useful. Another thing I think is useful for students is the online testing that gives immediate feedback. I guess I’ve given more thought to different ways of using technology for assessment. My level of awareness has been raised.”

Elementary faculty members, who taught math and communication skills courses had a less sophisticated responses to the above mentioned questions. However, they also showed a positive attitude toward the usage of technology for assessment purposes. The following are some excerpts from the faculty members’ comments:

“I guess with these new tools my interest has increased. I’ve always been interested in using technology in the classroom, and there are so many new tools available now so I’m excited about them. I would not say my views have changed.”

“Yes. Because of increased emphasis and availability, it is increasingly important to be able to use technology resources.”

“Most of my students do not even know what a Palm Pilot was until I showed them mine. Right now I have it just for my personal use.”

“I believe that we should be taught to use it. Someone should be brought in to show us how to use the technology and then maybe if I could see some results, I would be more likely to use it.”

“Slightly, I am still trying to come to know how technology fits it. It is a tool but I am not totally convinced that it is the best assessment tool in some areas of language arts.”

Hand-held computers and their applications for classroom formative and summative evaluation were emphasized in some professional development trainings provided by the PT3 project. In addition, faculty was provided with hand-held computers and was trained to use them. The analysis of the data gathered from the faculty at the end of Spring 2002 showed that while faculty are now familiar with this new device and see its potential for classroom assessment they still do not use them in their courses. The majority of faculty members, however, are using hand-held computers for their professional activities.
Proficiency in Using Hand-held Computers

<table>
<thead>
<tr>
<th>Please enter your level of agreement with the following statements about the use of hand-held computer technology. 1 = low, 4 = high</th>
<th>N</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>I regularly use PDA to schedule appointments or any kind of activity associated with a time and date.</td>
<td>15</td>
<td>2.5333</td>
</tr>
<tr>
<td>I regularly use PDA to keep names, addresses, phone numbers, and other information about my personal or business contacts.</td>
<td>14</td>
<td>2.5000</td>
</tr>
<tr>
<td>I regularly use PDA to create reminders and prioritize the things that I have to do.</td>
<td>14</td>
<td>2.4286</td>
</tr>
<tr>
<td>I regularly use PDA to take notes, memos and messages.</td>
<td>14</td>
<td>2.2143</td>
</tr>
<tr>
<td>I regularly use PDA to download my e-mail messages from my e-mail account.</td>
<td>14</td>
<td>3.2857</td>
</tr>
<tr>
<td>I regularly use PDA to respond to my e-mail messages when I am away from my desktop computer.</td>
<td>14</td>
<td>1.9286</td>
</tr>
<tr>
<td>I regularly use PDA to synchronize data between my desktop and PDA.</td>
<td>14</td>
<td>2.2143</td>
</tr>
<tr>
<td>I regularly use PDA to beam information to another PDA user.</td>
<td>14</td>
<td>2.0000</td>
</tr>
<tr>
<td>I regularly use PDA to make my classroom assessment more efficient and effective.</td>
<td>14</td>
<td>1.8571</td>
</tr>
<tr>
<td>I regularly use PDA to communicate and collaborate with peers.</td>
<td>14</td>
<td>1.8571</td>
</tr>
<tr>
<td>I regularly use PDA to individualize instruction, including meeting the needs of special populations.</td>
<td>14</td>
<td>1.7143</td>
</tr>
</tbody>
</table>

Hand-held Computers in Public Schools

One of the intermediate goals of the project was to pilot test the applications of hand-held computers in a public school senior English course for the purpose of preparing students for their senior projects. To achieve this goal a set of 25 Jornadas was made available to the New Hanover High School to be used by one of the secondary English interns during her student teaching. The UNCW intern, her partnership teacher and the school site coordinator attended the three training workshops on review of senior projects, online research and electronic portfolio using hand-held computers.

The observation of the student intern’s instruction by her faculty supervisor indicated that she used the hand-held computers to help high school seniors to:

- Take online tests where they could receive immediate feedback upon completion of the tests;
- Conduct online research during preparation for senior projects;
- Write and edit papers; and
- Conduct peer editing.

In addition to the observation of the intern’s instruction, students who received instruction and used hand-held computers in the New Hanover High School for the preparation and presentation of their senior projects, were surveyed. The following section summarizes the results of this survey.

The analysis of students’ responses showed that majority of students used word processing, Internet search and presentation software when preparing for their senior projects.
The analysis of students’ responses also indicated that the student intern or her partnership teacher used several technologies during the instruction.
Students’ responses also suggest that during their senior project semester, students were required to exhibit skills of using word processing and Internet search.

Students were also asked to rate several statements that measured their attitude toward using technology. The results indicated that students had a very positive attitude toward using technology during their senior project semester.

<table>
<thead>
<tr>
<th>Given your senior project experience rate the following statements</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learned to use a variety of technologies</td>
<td>24</td>
<td>3.04</td>
<td>.624</td>
</tr>
<tr>
<td>Without technology it was hard to complete my senior project</td>
<td>24</td>
<td>3.54</td>
<td>.658</td>
</tr>
<tr>
<td>Used technology to research</td>
<td>24</td>
<td>3.67</td>
<td>.482</td>
</tr>
<tr>
<td>Used technology to prepare final report</td>
<td>24</td>
<td>3.67</td>
<td>.482</td>
</tr>
<tr>
<td>Used technology to learn more about the topic</td>
<td>24</td>
<td>3.63</td>
<td>.495</td>
</tr>
<tr>
<td>Used technology to access additional sources</td>
<td>23</td>
<td>3.48</td>
<td>.511</td>
</tr>
<tr>
<td>Used technology to gather data</td>
<td>24</td>
<td>3.38</td>
<td>.711</td>
</tr>
<tr>
<td>Used technology to present my senior project</td>
<td>24</td>
<td>2.58</td>
<td>.776</td>
</tr>
</tbody>
</table>

1 = Strongly disagree; 4 = Strongly agree

Students were also asked to rate a list of potential problems in integrating technology into their senior projects. The analysis of their responses showed that about 50 percent of students found the following areas as potential problems for integrating technology into their senior projects:

- Lack of access to computers at schools (50 percent)
- Lack of knowledge to integrate technology (45.8 percent)
- Too much work to do (58.3 percent)
Technology-integrated senior project required too much preparation (50 percent)
There isn't enough time in class to use technology (66.7 percent)

How Successful Was The Project in Achieving its Goals; and Were There any Unanticipated Outcomes Appearing?

In order to determine whether the project was successful in achieving its goals, it was important to identify whether the program’s intermediate goals (implementation) were achieved. Table 8 summarizes the results of the triangulation of the multiple sources of data and their results (presented in the previous section) in achieving the program’s intermediate goals.

The program performance outcomes for phase one were also reexamined using triangulation of several sources of data and their results (presented in the previous sections). The results of such analysis are also presented in Table 9.

Table 8: How successful was the project in achieving its intermediate goals?

<table>
<thead>
<tr>
<th>Year</th>
<th>Intermediate Goals &amp; Benchmarks</th>
<th>How Successful was the Project in Achieving its Intermediate Goals?</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001-2002</td>
<td>1. By the end of Fall 2001, all secondary methods faculty will be trained in Senior Project and the use of hand held computer technology applications for assessment.</td>
<td>• The data showed that intermediate goals 1 and 2 were achieved by mid Spring 2002. The faculty and students were trained in Senior Project and in the use of hand-held computers. However, the results of the analysis suggested that the use of hand-held computers for assessment of instruction and students learning was not emphasized in the training workshops. The focus of the training workshop was on using hand-held computers for Internet access and research. By the end of Spring, faculty was still unsure about how and in what ways they could use hand-held computers for assessment of learning and instruction. The student intern who used hand-held computers in her class also demonstrated her limited knowledge of strategies that hand-held computers can be used for assessment of learning.</td>
</tr>
<tr>
<td>Phase One</td>
<td>2. By the end of Fall 2001 all secondary English interns will be trained in senior project and the use of hand-held computer technology applications for assessment.</td>
<td>• The number of student interns and faculty who were trained in the identified areas of needs suggested that a maximum of 40 percent of student interns and a maximum of 60 percent of the targeted faculty received training in the identified areas. As the outcome data further confirmed, this problem had impact on the achievement of the performance outcome.</td>
</tr>
<tr>
<td></td>
<td>3. By the end of Spring 2002, all elementary teacher education faculties (math and communication skills) will be trained in technology applications for K-2 assessment for mathematics and communication.</td>
<td>• The data suggests that goals 3 and 4 were achieved to some extent. The focus of both trainings was on assessment strategies. Hand-held computers and other technologies did not receive much attention in the training workshops. This lack of focus on technology for assessment results in an awareness but not enough knowledge of specific strategies for using technology in practice.</td>
</tr>
<tr>
<td></td>
<td>4. By the end of Spring 2002 all elementary education students (math and communication skills) will be trained in K-2 assessment and the use of hand held computers.</td>
<td>• The number of students and targeted faculty who were trained suggested that the intermediate goal 4 has been achieved.</td>
</tr>
</tbody>
</table>
Table 9: How successful was the project in achieving its performance outcomes?

<table>
<thead>
<tr>
<th>Year</th>
<th>Goals</th>
<th>Performance Outcomes &amp; Indicators</th>
<th>How Successful was the Project in Achieving its Performance Outcomes?</th>
</tr>
</thead>
</table>
| 2001-2002 Phase One-Year 1: Pilot | Reexamine, reform and establish curriculum, instruction, and applications for use of technologies for formative and summative P-16 classroom assessment. | Elementary & Secondary teacher education students will:  
1. Demonstrate the knowledge, skills and attitude necessary for effective assessment of student learning.  
2. Show awareness and skills in appropriate usage of technology for formative and summative evaluation of student learning.  
3. Show application of technology for classroom assessment in clinical sites during methods courses’ fieldwork and internship. | The triangulation of several sources of data suggest that:  
Students were able to demonstrate their knowledge, skills and attitude necessary for effective assessment of student learning.  
Students were able to demonstrate awareness of the importance of the use of technology for assessment. They were also able to demonstrate skills of using various technologies. However, they did not demonstrate a good understanding of how technology can be used for formative and summative assessment.  
Some students were able to demonstrate applications of some technologies for the assessment. However, the majority of students did not apply or did not have opportunity to apply their knowledge and skills in practice. |

Conclusions and Considerations

The first year of the PT3 project at the Watson School of Education, University of North Carolina at Wilmington was well on its proposed track. The three major accomplishments of the project in the first year were: 1) providing training for faculty members and students, 2) enhancing WSE technical facilities with the necessary hand-held computers and software, and 3) providing support for faculty and students to enhance their knowledge, skills and attitude in usage of technology for formative and summative evaluation.

The training workshops were well attended by the faculty members. The workshop participants were satisfied with the quality of the instruction received during the training and indicated that the training helped them in their understanding of the role of technology. As a result of PT3 professional training workshops, faculty members have improved their technology skills in different areas, such as developing web-based materials and using hand-held computers for professional activities. For most of the faculty members, the training workshops have raised their awareness and their comfort with technology to a higher level, and their attitude toward using technology in their courses has also been significantly improved.

Data collected from the interviews suggest that faculty members vary a great deal in terms of integrating technology in their courses for assessment of instruction and learning. There seems to be three groups among faculty members. The first group has been using...
technology in their teaching for a while and technology is part of their teaching. As a result of the PT3 grant, this group continued to hone their skills in usages of hand-held computers for assessment of learning. This group will use technology no matter what and will soon begin to develop strategies for using hand-held computers for assessment of learning. The second group, which consists of the majority of faculty members, is using technology in their teaching to a certain extent but feel challenged by the idea of using technology, particularly hand-held computer technology, for assessment of learning. This group of faculty feels somewhat inadequate in their skills and is challenged by the lack of ideas for using technology for assessment of learning and instruction. This group needs more training and assistance in order to become comfortable with the technology in general and technology for assessment in particular. The PT3 project could be of great help to this group. The third group, relatively small in numbers, is still resistant to the use of technology and tends to resist other new ideas as well. This last group is becoming increasingly small.

In the process of evaluating this project, I have noticed some areas the project staff may want to consider for the second year of implementation of the project:

- Even though the focus of PT3 project was on applications of technologies for formative and summative P-16 classroom assessment, there was not enough emphasis on the strategies for using emerging technologies such as hand-held computers for assessment of learning and instruction. Faculty members and professional organizations who are in charge of training faculty and teacher education students need to find models and ways that hand-held computers can be used for the assessment of learning and model them for the faculty. Without a good understanding of how emerging technology can improve assessment of student learning and demonstration of good examples faculty will have a hard time applying them in their courses.

- Due to the wide range of faculty skills and knowledge in the applications and integration of technology, the training workshops need to be tailored to the needs of different groups of faculty. While some faculty members may still need training in applications of some basic software before they begin learning to use emerging technology for classroom assessment, some other faculty members may need more advanced trainings in the applications of new and emerging technologies.

- The primary goal of PT3 project is to help pre-service students apply technology-based strategies for assessment of learning in K-12 classroom. Therefore, the emphasis must be placed on software and strategies for applications of technologies rather than on hardware and new devices. Student survey and faculty interviews suggested that both faculty and student interns thought that if they did not have hand-held computers available in their classrooms or schools they were not able to integrate technology for assessment of learning. The project needs to do a better job of communicating the emphasis on the applications of technologies rather than the technology itself. Faculty and students should be able to use the available computer devices in their schools (if they do not have access to the new and emerging PDAs) for assessment of student learning.

- Faculty members appeared to be informed of the overall purposes of the PT3 project through e-mail messages and presentations and announcements at faculty meetings. A
A regular update in the form of a newsletter or listserv would certainly encourage more of faculty member participation and contribution to the project.

- A lot of faculty members are interested in effective models for technology integration. The WSE needs to offer more “show and tell” seminars on using technology effectively and on the theoretical underpinnings of various technology integration models. There should be more opportunities within the grant activities for helping the interested faculty in generating some meaningful research questions to consider or pursue for their technology initiatives.
### Table 1: Goals, performance outcomes, intermediate goals and implementation plan for Phase One (year 1)

<table>
<thead>
<tr>
<th>Year</th>
<th>Goals</th>
<th>Performance Outcomes &amp; Indicators</th>
<th>Intermediate Goals &amp; Benchmarks</th>
<th>Implementation Plan</th>
</tr>
</thead>
</table>
| 2001-2002 | Reexamine, reform and establish curriculum, instruction, and applications for use of technologies for formative and summative P-16 classroom assessment. | Elementary & Secondary teacher education students will:  
- Demonstrate the knowledge, skills and attitudes necessary for effective assessment of student learning.  
- Show awareness and skills in appropriate usage of technology for formative and summative evaluation of student learning.  
- Show application of technology for classroom assessment in clinical sites during methods courses; fieldwork and internship. | Secondary methods faculty will be trained in Senior Project and the hand held computer technology applications for assessment.  
Elementary teacher education faculty (math and communication skills) will be trained in technology applications for K-2 assessment for mathematics and communication.  
Elementary education students (math and communication skills) will be trained in K-2 assessment and the use of hand held computers.  
**Benchmark:** By the end of Fall 2001, all secondary methods faculty will be trained in Senior Project and the use of hand held computer technology applications for assessment.  
**Benchmark:** By the end of Spring 2002, all elementary methods faculty will be trained in technology applications for K-12 assessment for mathematics and communication. | The following plan was developed after the analysis of the baseline data.  
**Fall 2001**  
**Training workshops**  
SERVE will provide the following training workshops for the secondary teacher education faculty and students:  
- Senior project overview (SERVE)  
- Senior Project: Online Research & Presentation using Jornada  
**Technology Tools**  
- A set of Jornada (hand-held computers) will be available to be used by trainers and secondary methods faculty  
**Spring 2002**  
**Training Workshops**  
SERVE will provide the following training workshops for secondary teacher education faculty and students:  
- Training on Senior Project Digital Portfolio  
NCDPI will provide the following training workshops for elementary teacher education faculty and students:  
- Principles of Classroom Assessment  
- Elementary Assessment in Mathematics and communication  
**The WSE will provide the following training workshops for faculty:**  
- Lectora Publisher Web Training  
- Palm Plot Training I  
- Challenges and opportunities of web  
**Technology Tools**  
- Faculty of WSE who attend Palm Pilot training will receive a Palm hand-held computer.  
- Faculty of WSE who attend Lectora training will receive a free copy of Lectora software.  
**Other activities**  
- A set of 25 hand-held computers (Jornadas) will be given to a senior English class in New Hanover County School to be used for developing senior projects.  
- Faculty will be supported to attend workshops and training sessions provided by national and international organizations in the use of technology for assessment.  
- Several new software will be available for faculty use.  
- Individual faculty’s initiatives on applications of technology for professional development will be supported. |
<table>
<thead>
<tr>
<th>Goals (Outcomes)</th>
<th>Outcome Indicators</th>
<th>Benchmarks</th>
<th>Measures</th>
</tr>
</thead>
</table>
| **Goal 1. At the end of Spring 2002, teacher education students (elementary and secondary majors) will demonstrate knowledge, skills, and attitudes necessary for effective assessment of student learning.** | Teacher education students will:  
- Analyze assessment cases and propose appropriate assessment strategies for the given situations.  
- Use proper assessment strategies in their lesson plans.  
- Apply proper assessment strategies in their microteaching and tutoring activities.  
- Show positive attitude toward classroom assessment in their reflective journals. | All elementary and secondary teacher education students will receive proper instruction in the area of classroom assessment in all their core courses and methods courses (for elementary education students focus will be on math methods; for secondary education students focus will be on all subject areas). | Number of students who can demonstrate knowledge, skills, and attitude will be compared to the baseline determined in Fall 2001.  
- Qualitative analysis of students’ writings, lesson plans and reflective journals.  
- Qualitative analysis of observations of students’ teaching practice during microteaching and tutoring activities. |
| **Goal 2. At the end of Spring 2002, teacher education students will show awareness and skills in appropriate usage of technology for formative and summative evaluation of student learning.** | Teacher education students will:  
- Show their knowledge of technology tools for assessment purposes in their writings, discussions and/or research projects.  
- Integrate technology for monitoring and assessing students learning outcomes in their lesson plans.  
- Use technology tools for formative and summative assessment of student learning during their microteaching and tutoring activities. | All elementary and secondary teacher education students will receive proper instruction in the use of technology for formative and summative assessment of student learning in all their core courses and methods courses (for elementary education students focus will be on math methods; for secondary education students focus will be on all subject areas).  
- All faculty teaching core courses and methods courses (elementary math methods, all secondary methods courses, grades 10 & 12) model use of technology for monitoring and assessing student learning in their courses. | Number of students who can use technology for the purpose of classroom assessment will be compared to the baseline determined in Fall 2001.  
- Qualitative analysis of students’ lesson plans.  
- Quantitative analysis of faculty observations of students’ usage of technology during their microteaching and tutoring activities. |
| 3. Teacher education students (elementary and secondary majors) will show application of technology for classroom assessment in clinical sites during methods’ course fieldwork and internship. | Teacher education students will:  
- Use technology for formative and summative assessment of student learning during their microteaching and tutoring activities. | All elementary and secondary teacher education students will receive proper instruction in the use of technology for formative and summative assessment of student learning in all their core courses and methods courses (for elementary education students focus will be on math methods for secondary education students focus will be in all subject areas for grades 10 & 12).  
- All faculty teaching core courses and methods courses model uses of technology for monitoring and assessing student learning in their courses. | Number of students who can use technology for the purpose of classroom assessment will be compared to the baseline determined in Fall 2001.  
- Qualitative analysis of students’ lesson plans.  
- Quantitative analysis of faculty observations of students’ usage of technology during their microteaching and tutoring activities. |
Table 3: Evaluation methods for Phase One (year 1)

<table>
<thead>
<tr>
<th>Goals (Outcomes)</th>
<th>Measures</th>
<th>Data Gathering Methods/Instruments</th>
<th>Time Data were collected</th>
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</thead>
<tbody>
<tr>
<td><strong>Goal 1.</strong> At the end of Spring 2002, teacher education students (elementary and secondary majors) will demonstrate knowledge, skills, and attitudes necessary for effective assessment of student learning.</td>
<td>• Number of students who can demonstrate knowledge, skills, and attitude will be compared to baseline determined in Fall 2001. • Qualitative analysis of students’ writings, lesson plans and reflective journals. • Qualitative analysis of observations of students’ teaching practice during microteaching and tutoring activities.</td>
<td>• Secondary student survey • Elementary student survey • Students’ sample lesson plans/analysis checklist • Faculty syllabi/analysis checklist • Faculty survey • Faculty observation notes or reports during observations of students’ usage of technology during their microteaching and tutoring activities.</td>
<td>• Fall 2001 (baseline), Spring 2002 • Fall 2001 (baseline), Spring 2002 • At the end of Fall 2001 &amp; Spring 2002 • Fall (baseline), Spring 2002 • Gathered at the beginning of Fall &amp; Spring • Gathered at the end of Spring 2002 • Gathered at the end of Spring 2002</td>
</tr>
<tr>
<td><strong>Goal 2.</strong> At the end of Spring 2002, teacher education students will show awareness and skills in appropriate usage of technology for formative and summative evaluation of student learning.</td>
<td>• Number of students who can use technology for the purpose of classroom assessment will be compared to baseline determined in Fall 2001. • Qualitative analysis of students’ lesson plans. • Quantitative analysis of faculty observations of students’ usage of technology during their microteaching and tutoring activities.</td>
<td>• Secondary student survey • Elementary student survey • Students’ sample lesson plans/analysis checklist • Faculty syllabi/analysis checklist • Faculty survey • Faculty observation notes or reports during observations of students’ usage of technology during their microteaching and tutoring activities.</td>
<td>• Fall 2001 (baseline), Spring 2002 • Fall 2001 (baseline), Spring 2002 • At the end of Fall 2001 &amp; Spring 2002 • Fall (baseline), Spring 2002 • Gathered at the beginning of Fall &amp; Spring • Gathered at the end of Spring 2002 • Gathered at the end of Spring 2002</td>
</tr>
<tr>
<td><strong>3.</strong> Teacher education students (elementary and secondary majors) will show application of technology for classroom assessment in clinical sites during methods’ course fieldwork and internship.</td>
<td>• Number of students who can use technology for the purpose of classroom assessment will be compared to baseline determined in Fall 2001. • Qualitative analysis of students’ lesson plans. • Quantitative analysis of faculty observations of students’ usage of technology during their microteaching and tutoring activities.</td>
<td>• Secondary student survey • Students’ sample lesson plans/analysis checklist • Faculty observation notes or reports during observations of students’ usage of technology during their microteaching and tutoring activities. • Targeted public school student survey</td>
<td>• Fall 2001 (baseline), Spring 2002 • Spring 2002 (a very small sample) • Some faculty provided the data some did not. • Spring 2002</td>
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</tbody>
</table>