The Growth of Reflective Practice: Teachers' Portfolios as Windows and Mirrors

Rebecca K. Fox, Ph.D. and Julie K. Kidd, Ed.D.
George Mason University

Diane D. Painter, Ph.D. and Gail V. Ritchie, M.Ed., NBCT
Fairfax County Public Schools

Abstract: Identifying accurate measures for evaluating learning outcomes has become an increasingly important issue for teacher education programs. This paper presents the findings of a program level portfolio research study conducted by a team of faculty members in an advanced master's degree program whose learning outcomes are aligned with the core propositions of the National Board for Professional Teaching Standards. The two goals of the study were to deepen our collective understanding about a) what program portfolios from an advanced master's degree program for practicing teachers might reveal about the teachers' knowledge growth during the program, and b) how portfolio data might be used to inform program update and change based on the evidence from teachers' entries. The article discusses the possibilities of portfolios as a programmatic performance assessment tool and describes how the program used performance data to inform update and change at the course and program level as a result of the study.

Introduction

In response to the complex challenges of today's diverse classrooms and schools, educators need professional development opportunities throughout their careers that support the growth of knowledge about teaching practice as well as inspire creativity and deepen critical reflective practice. Today's call for highly qualified teachers, as stated in the *National Commission on Teaching and America's Future* (1996) and in the *No Child Left Behind Act* (NCLB), has become a driving force to extend professional development beyond initial licensure coursework. The National Commission stated that the most important element in achieving quality student learning is the quality of the teacher and, most recently, NCLB actually mandates teacher quality so that by the end of the 2005-06 school year, "every child in America is taught by a teacher who knows his or her subject" (U.S. Department of Education, 2004). For teachers to achieve this high level of quality, they need to engage in professional development that builds on the skills they have developed as classroom practitioners and deepens their professional knowledge. Teacher education programs should provide learning opportunities for teachers that are carefully scaffolded to support innovative thinking about teaching and learning not only to improve their practice but also to enhance student learning in their Preschool -12th-grade (P-12) classrooms. The purpose of this paper is to present the findings of a program level research project conducted by a team of faculty members with the goal of determining what program portfolios from an advanced master's degree program for practicing teachers might reveal about the teachers' knowledge growth during the program. Faculty also wanted to determine if and how the portfolio data might be used to inform program update and change based on the evidence from teachers' entries.

In order to provide strong and relevant learning experiences for the teachers enrolled in their programs, it is a responsibility of teacher preparation programs to engage in regular update and change. Teaching requires both a high level of competency and a deep level of understanding of our increasingly diverse society, child development, pedagogy, technology, and

the subjects taught. The National Board for Professional Teaching Standards (NBPTS) has been proactive in its work with teachers in providing a framework for articulating goals for advanced programs to help them promote the professional development of experienced teachers. In providing this framework, the NBPTS has defined professional teaching excellence according to knowledge, skills, dispositions and beliefs that connect with the five following broad propositions: teachers are committed to students and their learning, teachers know the subjects they teach and how to teach those subjects to students, teachers are responsible for managing and monitoring student learning, teachers think systematically about their practice and learn from experience, and teachers are members of learning communities (http://www.nbpts.org).

Conceptual Framework

Over the last 20 years, an increasing number of teacher education programs have included portfolios among their program requirements, and some researchers believe that the portfolio has taken a leading role in the reform in teacher education programs (Barton & Collins, 1993; Diez, 2001). If carefully implemented and evaluated, teaching portfolios can provide evidence of a teacher's discipline-specific expertise, assessment strategies and instructional techniques used in the P-12 classroom, and information about student learning (Winsor & Ellefson, 1995; Carroll, Potthoff, & Huber, 1996). Portfolios may also serve as a forum for documentation of directed reflection to form the basis for professional growth and development (Barton & Collins, 1993; Fox, 1999). Research on the use of portfolios has focused on the most efficient and effective ways to prepare portfolios, the stages candidates go through as they develop their portfolios, the different ways portfolios can be used, and the impact of portfolio development of candidates and the growth of their reflective practice.

Within the national context of providing all classrooms with highly qualified teachers, accrediting agencies such as the National Council for the Accreditation of Teacher Education (NCATE), as well as many state-level accrediting offices, are requiring that teacher education programs provide evidence of the degree to which their program candidates meet published standards. Teacher education programs must answer to the public and legislative demands for accountability; they must work toward the professionalization of teaching by developing credible and defensible performance assessment that will demonstrate to the public and to accrediting agencies that a program's candidates have mastered national, state, and institutional standards. Achieving effective assessment practices that can provide concrete evidence of candidates' knowledge has thus become an increasingly significant issue in education (Cochran-Smith, 2001).

As programs have moved toward developing more authentic measures of assessment in their courses and programs, they have initiated performance-based assessments to replace some of the more traditional paper and pencil tests used heretofore to evaluate candidate knowledge. Many teacher education programs have instituted summative portfolios in order to provide candidates with the opportunity to demonstrate their knowledge (Fox, 1999; Zeichner & Wray, 2001). Given the high stakes involved in program accreditation and the call for performance-based assessments to provide evidence of program efficacy, there is surprisingly little empirical research that has emerged to examine and evaluate the contents of these portfolios or the results of their use as a summative performance-based assessment tool.

Program Description

In response to the need for advanced professional development for teachers, the Advanced Studies in Teaching and Learning (ASTL) Program at George Mason University was created to provide professional development to educators that emphasizes critical reflective practice (Brookfield, 1995; Sch n, 1983, 1987), collaboration, continuous improvement, and P-12 student achievement. The program outcomes have been aligned with the five core propositions of the National Board for Professional Teaching Standards (NBPTS). The program includes three additional learning outcomes that are related to diversity, technology integration, and teachers as change agents. In meeting the program goals, the ASTL program draws on teachers' knowledge and experience, as well as on theoretical and empirical research, to construct professional learning communities of educators who explore new ways of thinking about teaching and learning with the goal of improving their practice and enhancing student learning. All ASTL program participants complete a program portfolio as evidence of their growth and development and as performance-based evidence of the degree to which they meet program learning outcomes (Campbell, Melenyzer, Nettles, & Wyman, 2000; Fox & Ritchie, 2003; Lyons, 1998).

The ASTL Portfolio

The purpose of the ASTL Professional Development Portfolio is twofold. First, it encourages program participants to develop their teaching practice to the highest level. This is accomplished through evidence of targeted reflection, presentation of pedagogical and content-based knowledge, action research skills as they inform teaching practice, and a synthesis of professional knowledge and skills (Barton & Collins, 1993; Hammadou, 1998). Secondly, it provides performance-based evidence of the degree to which program goals have been met (Campbell et al., 2000). As both a formative and summative document, the ASTL Professional Development Portfolio articulates the principles of the National Board for Professional Teaching Standards and the three additional ASTL Standards, other content–specific standards, and the mission and goals of the Graduate School of Education at George Mason University.

As a point of reference, the ASTL Program uses the following working definition for its program portfolio:

A performance-based document consisting of a collection of carefully selected materials, examples, and reflections, assembled over time and presented to program faculty, that provide an evidence-based record of a teacher's knowledge base, skills, professional growth, teaching practice, and leadership skills. (Fox, 2004)

The Portfolio, compiled along the continuum of the year-long Education Core, includes both course products and a series of reflection points written at specified times throughout the year. Reflection Points provide program participants the opportunity to synthesize and reflect upon their own growing learning and teaching practices as they move through the carefully scaffolded program. A Portfolio Presentation at the conclusion of the Core provides a targeted opportunity for program candidates to synthesize their learning and consider its impact on their teaching practice. It also provides program faculty an essential opportunity to hear candidates discuss their Core learning and how they are applying the P-12 setting. The reflections, portfolio entries, and final portfolio presentations help teachers make important connections between and among their program coursework, personal development, and daily encounters with student learning in the context of school-based experiences. The contents of the Professional Development Portfolio and the selected Reflection Points provide program participants with 1) a forum for the presentation of their knowledge and practice as articulated by the NBPTS and 2) an

opportunity to synthesize and share how they are linking theory and practice in the P-12 setting. (See Appendix A.)

<div align="center">Method</div>

Purpose of the Study

This study focuses on ASTL program candidates' learning as evident in the ASTL Program Portfolio. It examines the depth of their knowledge base, engagement in reflective practice, and the impact of their learning on their classrooms as seen in the professional portfolios of program candidates in the year-long ASTL Program, known as the Education Core. Specifically, the following research questions have emerged:

1. What does the program portfolio reveal about program completers' perceptions of what they learned in an advanced master's degree program that aligns learning outcomes with the Core Propositions of the National Board for Professional Teaching Standards?
2. What does the program portfolio reveal about teachers' perceptions of the ways they use this knowledge and apply it to their professional practice?

Participants

Participants in the study included two cohorts of teachers (N=40) who completed ASTL portfolios in the Spring of 2003 (Cohort 1: N=17; Cohort 2: N=23). The teachers range in experience from 3 to 17 years, with a mean of 6 years. Cohort 1 is comprised of 14 female and 3 male teachers and there are 19 female and 4 males in Cohort 2. The ethnic composition of each cohort is as follows: Cohort 1 is comprised of 1 Hispanic, 1 Native American, and 15 Caucasians; Cohort 2 has 3 African Americans, 1 Hispanic, and 19 Caucasians.

Researcher Perspectives and Context

The researchers are university and school-based practitioners who have experienced teaching at the P-12 and university levels. Two of the researchers are currently program administrators and faculty members teaching in the program; two are P-12 educators serving as adjunct program faculty. Of these two, one is a National Board Certified Teacher who brings into the program, and this study, insider knowledge about the National Board process. This combination of experience has provided an important set of perspectives for the analysis of the data. All members of the research team actively conduct teacher research as part of their growth and development as teachers, university faculty, and researchers. The university-based research faculty members strongly believe that their active engagement in action research is an essential part of their research life as university faculty since they teach action research in their graduate level classes (Zeni, 2001).

As a viable group of faculty researchers, they also believe that the efficacy of conducting this programmatic study is manifested in multiple areas of accountability: to the teachers themselves enrolled in the program, to the P-12 students in their classrooms who are the recipients of a potentially more "highly qualified" education, to one another as program faculty and fellow researchers, and to the profession as members of a learning community seeking meaningful ways to achieve ongoing professional development and inform programmatic update and change. Through the implementation of programmatic portfolios, the team has sought to delve deeply into both the process of portfolio completion and the results of the portfolio product (Fox, 1999).

Data Collection and Analysis

Four principle sources of data inform this study: 1) required reflections from course products included in the ASTL Portfolio; 2) researchers' memos; and 3) transcribed audio tapes of end-of-program oral portfolio presentations.

The data were analyzed qualitatively across cohorts using a combination of both hand coding methods and the NVivo™ qualitative software analysis program (Bazeley & Richards, 2000; Gibbs, 2002). The data were collected over the course of the year as course product reflections were completed. Specified course products were incorporated into the Portfolio at the end of each course, and these included a required reflection on the process and outcomes of the product. At the conclusion of the program, candidates reviewed their portfolio contents and wrote a final synthesizing reflection in preparation for the portfolio presentations, a program exit requirement.

Using hand coding and allowing for themes to emerge, the portfolio course product reflections were analyzed for all candidates. Analysis was ongoing throughout the year, as themes emerged from the data (Coffey & Atkinson, 1996; Maxwell, 1996). These themes were used to inform the selection of node categories later used in the NVivo™ analysis. In addition to the portfolio course product reflections, audiotapes of the final presentations for each cohort were transcribed and coded for emergent themes (Strauss & Corbin, 1990). Researchers also listened extensively to the taped presentations seeking to capture nuances or subtleties of comment on the part of the program candidates. This enabled researchers to gain deeper insight into the analysis that might not readily be evident solely from reading the transcriptions.

A combination of hand coding and NVivo ™ analysis served to establish nine principal themes. These themes became the nine free nodes entered into NVivo™ to be used for analysis. The nine themes/nodes are as follows: critical reflection, inquiry, differentiation, student-centered classrooms, multiple perspectives, future teaching, technology, collaboration, and agent of change.

Findings

The themes that emerged from the portfolios provided a window into teachers' perceptions about the ways they are applying Core learning experiences in their own professional practice as well as with their P-12 students. Course products and reflections throughout the portfolio provided knowledge about the growth of candidates' critical reflective practice, inquiry into teaching and learning, student-centered practices, differentiation, and accounting for multiple perspectives. In addition, the reflections provided insights into the candidates' perspectives on their future teaching, use of technology, collaboration with peers, and role as agents of change.

Critical Reflective Practice

One theme prevalent throughout the portfolios was the candidates' focus on critical reflective practice. Analysis revealed two distinct genres of reflection: active reflection on classroom practice and the role of reflection in the candidates' growth and development. Candidates indicated they grasped the value of reflection. One candidate wrote, "One of the most valuable things I have learned is the importance of anecdotal records and reflective journal writing. By looking at my work this way, I can make sense of what my students and I are doing.

I can go back and study this and see themes and then make changes." Another candidate saw the benefit of reflection as a way to improve instruction and enhance student learning:

> Teachers need to reflect as soon as possible so that they do not lose what they could learn from the things that happen in their classrooms. So much is lost or filtered by waiting. I will need to become more disciplined and keep reflection books nearby at all times. You never know when you will have something happen in your class that leads to a breakthrough in your teaching and the students' learning.

Not only did candidates apply reflection to their classrooms, but they also directly recognized the importance and potential power of reflective practice. Reflection can be a vehicle for looking at things differently, as this candidate wrote: "I often consider the deeper meaning of things, but when I write them down, I can examine them more. I tend to look at things at face value unless I can really study them. Reflection helps me to look at situations from different perspectives." One candidate explained, "Organized reflection has allowed me to see myself as a learner again. Learning is reflection and reflection is the key to learning. It is a cycle that I am now a part of; my students can join me in this endeavor now that I am aware of it and how important it is."

Inquiry Into Teaching and Learning

It was also evident that candidates viewed inquiry into their practice as a window into teaching and student learning. Candidates recognized the need to examine and ask questions about their teaching by paying careful attention to what their students' work could tell them about their teaching practices and their students' learning. They realized the importance of the type of systematic thinking that requires teachers to take a studied look at what happened, why the events happened, and what the implications may mean for future teaching. As part of this process of analyzing student work reflectively, candidates examined a variety of instructional processes and products, including student work samples, student journals, summative evaluations, class discussions, and question and answer sessions. They also took into account their observations of students during instructional activities.

As they examined their students' work, candidates noted the importance of looking at student responses to make changes to instructional practices. One candidate explained, "Observing students and writing this all down has really given me insight into my lessons. I am able to consider what needs to be changed or rearranged." Using the insights gained from systematically thinking about instruction, some candidates revised assignments for their students to align more closely with P-12 students' skills or needs. Others noted that student understandings were not evident in discussions, journal responses, or oral interviews and that these discoveries led to re-teaching a concept or skill.

As candidates delved further into their teaching practices, they reflected on their use of assessment to plan instruction designed to best meet the strengths and needs of their students. For example, two of the candidates directly mentioned the value of designing a learning unit using the backward design process that first identifies learning outcomes before planning actual learning experiences. One stated, "Overall, I must admit that by using the backward design process and choosing what I wanted students to know before choosing the assignments that would help students learn, this was the best prepared I have been to teach a unit." Candidates also discovered that using rubrics for guiding instruction was surprisingly helpful for students as they navigated the assignments. One candidate stated, "I felt the rubric effective in this project

for guidance, reflection, and evaluation from the student perspective. I saw the students refer to it throughout the creation process and use it accurately to assess their work in the end."

Differentiation of Instruction

A need to revise planned instruction was evident as the candidates discussed how they became more aware of how crucial it is to differentiate instruction. They recognized that it was essential to set individual goals for students and provide opportunities for students to respond according to learning styles or multiple intelligences preferences. In looking at her teaching, one candidate shared, "I need to keep my focus on the influences of learning styles and adapt my teaching to the students and their needs." Another said that the course project "has demonstrated to me how effective an MI [Multiple Intelligence] inventory can be in planning differentiated instruction early in the school year before you have had the chance to get to know the children well enough to presume what you think their primary intelligences and learning styles are." The candidates also realized the importance of encouraging students to take risks and giving students more choices in how they will meet learning objectives.

As candidates examined their students' work, they found they paid closer attention to the developmental levels of their students, the cognitive connections the students were making, and the higher-level thinking skills that students were demonstrating. One teacher explained, "I think we are all striving to incorporate more personalization as we strive to meet the individual needs of each and every student." They also discussed the importance of scaffolding instruction and identifying misconceptions early in the learning process. One candidate explained that by reflecting on her videotaped lesson, she "could see more clearly students' understandings, observations, and misconceptions." In addition, they noted the necessity of clarifying instructions for linguistically diverse students and selecting teaching strategies that respond to the diverse strengths and needs of their students.

Student-Centered Classroom

Also evident was an emphasis on student-centered classrooms where a classroom climate that incorporated student choice, authentic learning experiences, and students' control over their own learning (empowerment) was established and maintained. One candidate noted that by looking at the individual student, she is able to "remember that the group is comprised of many individuals." Drawing upon their understandings of individuals with varying interests and abilities, candidates indicated that they felt it was essential to provide choices in how students could express their learning. An elementary candidate explained how she implemented choice in a way that still met the instructional goals: "I also wanted to give the students a choice of activities to ensure enjoyment and learning. All of the center choices were created around a particular learning goal and by allowing for student selection, the children had a say in their learning and hopefully an increased enjoyment."

In a similar manner, some talked about the need to provide authentic learning activities that have direct connections to real-world situations. One candidate noted that her mathematics students "felt they were better able to see connections between the work we do in class and the actual solutions to real-world problems." An "aha" moment was captured when one teacher wrote:

> Students were able to choose projects that motivated them and the ways, product and modality that they wanted to complete in the project. While I think this is excellent and surely leads to internalization of knowledge, it was hard work at first…. Real success is

possible, and especially when the students want to learn…. Relevant learning occurs when students have active voices in their own learning.

Multiple Perspectives

Portfolio contents also revealed that candidates valued multiple perspectives and encouraged the voices of their students to be heard. They discussed how course experiences and projects helped them look at their students and their teaching differently, as well as how these experiences contributed to their creating a warm and supportive atmosphere that is safe and welcoming. Providing a safe and inviting classroom environment in order for students to be able to honestly express their thoughts was important to this elementary school candidate: "It is quite important, especially in reading class, to allow my children the opportunity to discuss their feelings and thoughts about particular books, which is why this type of environment is so critical."

A focus on understanding and working with culturally and linguistically diverse students was also evident throughout the portfolio process. One candidate asserted, "I think that in our classes, everyone benefits from diversity. Working with S. through a cultural lens has allowed me to see my teaching with a fresh lens." Another candidate shared:

During discussion one day, I realized that I viewed African American children as different children from other minority races. I did not consider their culture to affect their learning in my classroom like I did other cultures. I viewed their ancestors as being part of our culture . . . This sounds ignorant for me, although I consider myself well educated, non-discriminating. This was a really important moment for me.

One student seemed to sum it up when she said, "If I am not able to read signs from my students, I will miss my chance to flex into the role they need me to be, to understand them for who they are. I have to consider many perspectives and then see how I can use them to their best advantage."

Future Teaching

As candidates were challenged to consistently think deeply about their teaching and their students' learning, they posed questions in their reflections and made statements in their presentations they felt would guide them in their future teaching. Although the majority of the candidates made statements that reflected feelings of validation for what they taught, all candidates indicated some improvements could be made in the design or delivery of their lessons. Some candidates stated they would re-teach a skill or concept in preparation for the unit.

Candidates also indicated they would make changes in the preparation of materials or procedures and would modify aspects of the implementation instruction. Specifically, they wanted to find materials or re-write existing materials to be more on the comprehension level of their students. They also wished to include more follow-up activities and incorporate more technology into their lessons. Some candidates contemplated introducing concepts or activities at a different time within a unit or teaching the unit at a different time of the year. They also discussed the need for more efficient time management and thought about breaking activities into smaller units or spending less time on explicit instruction and more time on discovery or exploration activities.

In this line of thinking, candidates discussed providing more collaborative opportunities, less teacher-directed instruction, and more differentiated instruction based on student needs.

Several mentioned pairing students in order to provide buddy assistance or providing support in smaller group settings. They also considered conferencing more with individual students and altering feedback strategies to meet the needs of certain students. In addition, they discussed revisiting themes or enduring understandings more often during an instructional unit and making better connections between the concepts presented in the lesson with real-life situations.

In terms of assessment, several candidates indicated a desire to revise rubrics or performance checklists to make them less complicated and more reader friendly. Several indicated they would involve students in the revision of the rubrics. As candidates considered ways to improve their rubrics, they discussed adding images to make the categories clearer to understand and adding a comment section for more specific feedback. They also thought about breaking categories into smaller, more precise sections. For example, one candidate expressed a need to address sub-categories of composition and style on a writing rubric. Some candidates mentioned the need for including fewer traditional assessments and more authentic assessment opportunities, such as oral presentations, skits, and class discussions.

Technology, Collaboration, and Agent of Change
        Three final ASTL programmatic learning outcomes, identified as the themes *technology*, *collaboration*, and *agent of change*, were mentioned fewer times than other themes in the portfolios themselves, but received greater attention in the final presentations. Although technology was integrated throughout the Core coursework, it was not a specifically requested reflection point for the portfolio entries until toward the conclusion of the coursework. Some candidates mentioned that they had gained a deeper knowledge in their own use of technology, but had had less opportunity to date to make changes in its implementation in their P-12 classrooms. One teacher shared:

> I've learned so much about how technology can provide another dimension to learning for our students. I need more time to think about how I'll really integrate it into learning units next year. This year, I've concentrated more on how I am using it. I really learned a lot from my group on Blackboard, so I think I'd like to have my own students use that next year.

The theme *collaboration* included any statement candidates made that indicates the connections they felt with their peers and teachers, including references to "critical friends" and "learning communities." This theme emerged most often during the portfolio presentations. Candidates stated that a strong learning community was established with colleagues in the program and that they wanted to continue to collaborate and exchange ideas with this close group of "critical friends." They wanted to think about "how I can help move our school toward a more collegial culture . . . [something] to consider as we begin to plan for next year at the school level." Others mentioned that since collaboration had been such an important dimension to their learning they wanted their own students to work this way: "I want my students to have a strong learning community that I am part of, too. I don't think you're ever too young to learn from your peers, and to foster any child's learning, communication is crucial."

Agents of change included any statement candidates made that shows they feel empowered, have a voice, and have the confidence and the wherewithal to effect changes within the classroom and/or the field. Candidates shared they were excited about their potential as agents of change. Some felt that they were already effecting change, while for others this was a new concept that needed additional time for processing and consideration. A teacher who felt

quite empowered said, "I handed my principal the article and said that it offers a lot of food for thought and an interesting framework to consider as we begin to plan for next year at our school level. I want to be part of some change." Other candidates viewed their action research projects as empowering: "I began to imagine how action research might affect the higher order of things – the powers that be . . .the politicians that fund our school district." Another shared, "I've come to view action research as something empowering, to myself, to my students and to other teachers. I would like to see our whole school involved in action research projects together and share our work at the end of the year."

Discussion and Implications

The themes that emerged from the analysis of the portfolio reflections and presentations provided program faculty a window into the results of program course work; they closely reflected the program goals. It was evident that portfolios contain data that can provide programs with insights into whether candidates are truly achieving the goals and outcomes of the program in a way that relying on grades or isolated course products cannot. It was clear from the portfolio reflection point entries and presentations that candidates grasped the importance of reflective practice and incorporated it as part of their ongoing classroom work and teacher research. It was also evident that candidates took an inquiry approach to teaching and learning that enabled them to differentiate instruction, implement student-centered practices, and encourage the multiple perspectives of their students. Likewise, candidates were able to think about their future teaching and discuss their use of technology, the role of collaboration in teaching and learning, and their empowerment as agents of change.

Portfolios as Windows and Mirrors

Because portfolios and portfolio presentations are a time-consuming element of the program for both participants and faculty, the researchers were keenly interested to see what evidence was contained in them that would complement or deepen information already available to program faculty (e.g., course grades and course products) about what the candidates had learned in the program. Analysis of the data showed that portfolios are a valuable source of information about what the teachers had actually learned. Portfolios are meaningful to the ASTL Program because it provides important insight into how well program participants connect to the program's eight learning outcomes and how they incorporate this new knowledge in their classrooms as well as their thoughts about the process. By considering carefully the portfolio entries and reflection points, faculty are able to gain greater insight into how well program participants are grasping important concepts and applying them to their teaching setting.

Nearly all program candidates are serious students and achieve high grades for coursework, so to compare their grades provides only a superficial view of what a candidate might have learned. However, the portfolios allowed access to understanding a deeper dimension of their work that extends beyond basic information that might be evident from a traditional test. Course projects require application of knowledge while working with P-12 learners and require the candidate to make connections to theory and research. Reflections at the end of course products provided a personal value dimension to the assignment, allowing for both formative and summative evaluation of the learning experience. Faculty and candidates were both able to consider the course projects from a higher level of examination and application, seeking synthesis and application of knowledge. It was clear to all stakeholders that candidates saw the value of what they learned and were able to apply the Core knowledge to the P-12 setting.

Therefore, the program portfolios were able to serve as a window into what candidates learned and did as a result of their engagement in the ASTL Program.

As candidates reflected on this learning, the portfolios became mirrors that helped them see their own teaching and learning more clearly. As they examined their own critical reflective practice, candidates said that they thought more systematically and more critically about their teaching as a result of the ASTL Program. Many of them began to actively incorporate journal keeping and reflective writing in their own classes as a way to better understand what and how their P-12 students were learning. To program candidates, the reflections became mirrors that provided insight into their practice and helped them to see the ways in which they were growing and changing along the continuum of their Core experience. To program faculty, their analysis of the reflections enabled them to examine their own teaching practice and use the findings to make programmatic decisions.

Implications for Program Change
From the ASTL Portfolios, including the summative presentation component, Program faculty have been able to identify several lessons learned and have thus established suggestions for programmatic policy, update, and change. Some of these ideas potentially may have been brought to the forefront through faculty discussion, but the evidence provided in the portfolios and the presentations created the forum needed for active consideration and the data to support suggestions for change. Future ASTL Portfolios will serve to validate these changes or to inform additional updates or course alterations.

Many program revisions were curriculum related changes. For example, after seeing the patterns of reflective writing in the portfolios, Program faculty who were teaching the two opening courses decided to recommend a change in the order of the courses to promote more systematic and scaffolded experiences for written reflections. The change in the order of these two courses, coupled with more detailed attention into how to better facilitate the growth of critical reflective practice for everyone, was initiated immediately for the next starting cohort. The faculty teaching these courses collaborated on several new ways to better facilitate this growth, partly by using technology more actively through *Blackboard 5™* online discussion strands. As a result, course products from the current cohort suggest a richer, deeper level of reflection earlier in the Core than had been evident at the same point in the program for the prior three years.

Other changes were more logistical in nature, but could ultimately have an effect on candidates' teaching and learning. The action research and case study course products for the cohort lacked a depth of analysis and synthesis that faculty were expecting. The teachers' reflections and discussion during the portfolio presentations corroborated on this finding. Both faculty and students felt that more time was needed to complete course products; they indicated that additional time for peer review might provide the scaffolding needed for deeper and richer research analysis in their case studies and action research projects. As a result, program changes in scheduling were put into effect, and additional course changes allowing more time for teachers to process information and implement interventions in the action research projects prior to analysis were added. Data gathered from the program portfolios from the next academic year will allow the researchers to examine the results of the changes indicated here.

Implications for Future Research

Because of the insights gained through this initial study of program portfolios, it is essential that research continue in order to gain greater insights into what portfolios might reveal about candidates' attainment of learning outcomes and program effectiveness. As this line of research continues, attention to the growth and changes in candidates' critical reflection is important. While analyzing the ASTL Portfolios, the researchers noted there was a distinct element of growth, change, and improvement in the reflections written by program candidates over the course of their Core experience. From the first course, when reflection was a new skill for many, to the final reflection point and portfolio presentation, the researchers remarked on a distinct refinement of thought and a growing ability on the part of the teachers in the program to articulate their puzzlements and delve into various reasons for them. Further investigation is needed to identify the shifts that occur in candidates' reflective practice and how and when these changes occur. The researchers would also like to know if all program participants grow in their reflective practice, or if some do not meet the anticipated expectations and if not, why. They would like to explore what can be discovered about candidates' attainment of learning outcomes and the impact on their professional practice and P-12 classroom practice by noticing the subtle and perhaps not so subtle shifts in their reflections about their inquiries into teaching and learning.

Conclusions

In this study, the ASTL Portfolios from two cohorts of teachers provided a comprehensive and deep view of program teachers' knowledge of program learning outcomes. It was evident that candidates applied the knowledge gained from their program learning experiences to their professional practice and in their P-12 classrooms. Teachers clearly conveyed the value of critical reflection and discussed how they used reflection as a tool for inquiry into their teaching and their students' learning. By systematically thinking about teaching and learning in their own classrooms, they discovered they paid closer attention to the differentiation of instruction, implementation of student-centered practices, and the multiple perspectives of their students. The portfolio reflections and exit presentations to faculty and peers also provided teachers with targeted opportunities to reflect on the impact this year-long learning experience had on their classroom practice. In addition, teachers discussed the value and challenges of using technology for their own growth and professional development, as well as with their students. They valued collaborating with peers and spoke about taking on the role of being change agents in their schools.

Through candidate reflections, course products, and presentations, the ASTL program portfolios provided researchers with a window into the candidates' learning and a mirror to reflect upon needed changes and program updates. Course by course assignments might provide individual instructors with insights into the learning and growth of candidates, and GPA provides a snapshot of academic achievement. However portfolio evidences allow all stakeholders to view the growth and nature of learning over the course of an entire program. It is not until all of the pieces come together in one place that candidates and program faculty and administrators can realize the full impact and the specific needs of the program. As a result of this study that examined program portfolios to document what candidates learned during the program, the data suggest that program portfolios have the unique potential to reveal insights into what candidates learned and the actions they took in their classrooms. Program portfolios have the potential to provide important insight into learning in a way that can not be captured by merely recording course product grades or collecting course evaluations. Portfolios can serve as

a viable means for teacher educators to fully realize the impact of their programs and identify needed program revisions.
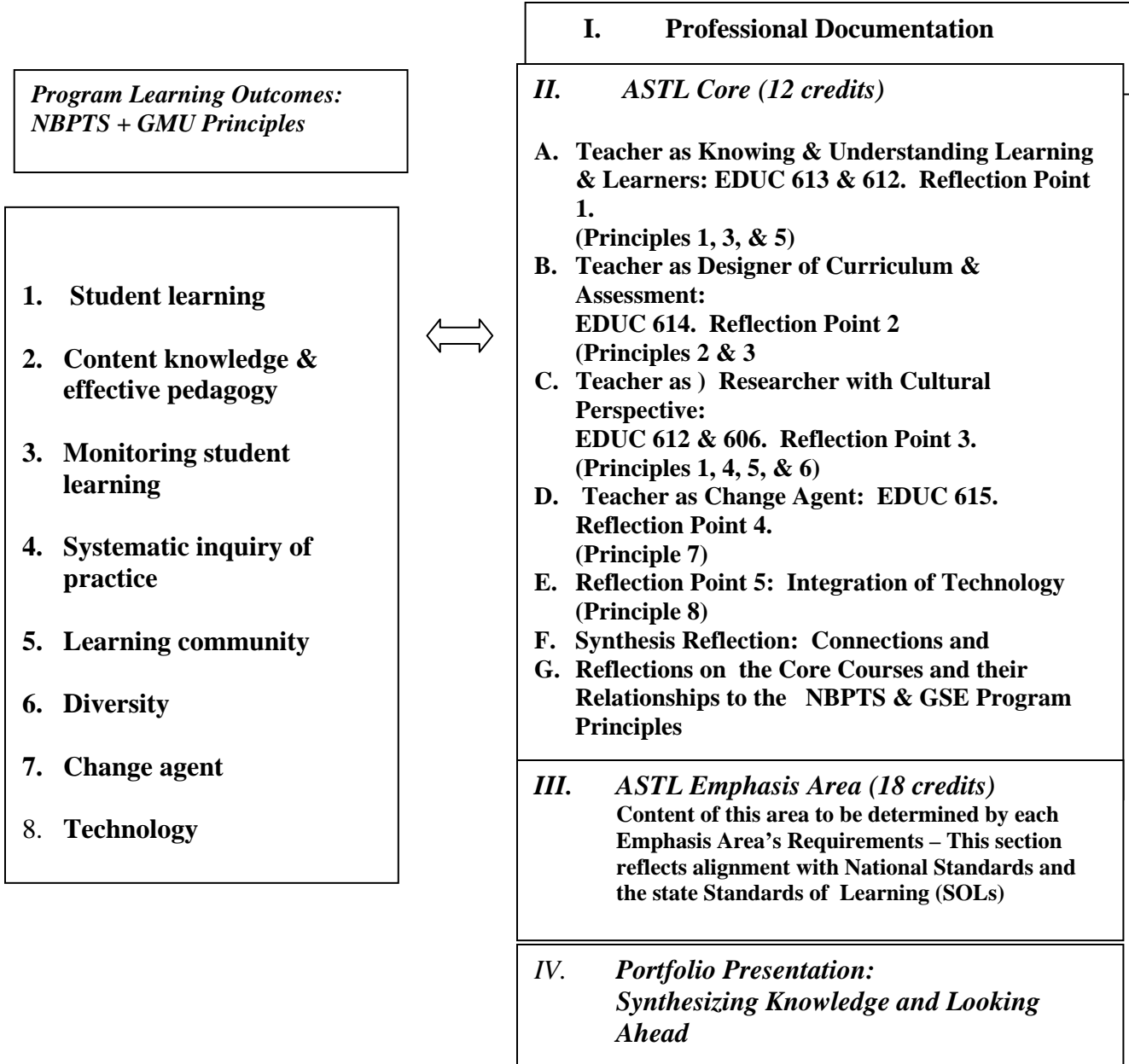
References

Barton, J., & Collins, A. (1993). Portfolios in teacher education. *Journal of Teacher Education, 44*, 200-210.

Bazeley, P., & Richards, L. (2000). *The NVivo™ qualitative project book.* Thousand Oaks, CA: Sage..

Brookfield, S. (1995). *Becoming a critically reflective teacher.* San Francisco, CA: Jossey-Bass.

Campbell, D., Melenyzer, B., Nettles, D., & Wyman, R. (2000). *Portfolio and performance assessment in teacher education.* Boston: Allyn & Bacon.

Carroll, J. A., Potthoff, D., & Huber, T. (1996). Learnings from three years of portfolio use in teacher education. *Journal of Teacher Education, 11*, 243-261.

Cochran-Smith, M. (2001). Constructing outcomes in teacher education: Policy, practice and pitfalls [Electronic version]. *Education Policy Analysis Archives, 9*(11).

Coffey, A., & Atkinson, P. (1996). *Making sense of qualitative data: Complementary research strategies.* Thousand Oaks, CA: Sage.

Diez, M.E. (2001). Assessing student competence in teacher education programs. In C.A. Palomba & T.W. Banta (Eds.), *Assessing student competence in accredited disciplines: Pioneering approaches to assessment in higher education* (pp. 29-48), Sterling, VA: Stylus.

Fox, R. (1999). *This is who I am: The role of the Professional Development Portfolio in foreign and second language pre-service teacher education.* (Doctoral dissertation. George Mason University, Fairfax, VA, 1999*). Dissertation Abstracts International, 60-05A*, 1516. UMI Microform no. 9933323

Fox, R. (2004, February). Portfolios as a performance assessment for advanced graduate studies: The Advanced Studies in Teaching and Learning Program. Paper presented at the American Association of Colleges for Teacher Education, Chicago, IL.

Fox, R., & Ritchie, G. (November, 2003). How higher education is improving teacher quality and raising student achievement: Promoting critical reflection and change through program portfolios. Invited presentation at the NCATE – NBPTS Higher Education pre-session. Washington, D.C.

Gibbs, G. (2002). *Qualitative data analysis: Explorations with NVivo*. Buckingham: Open University Press.

Hammadou, J. (1998). A blueprint for teacher portfolios: Concerns that need to be addressed when embarking on teacher assessment via portfolios. In J. Harper, M. Lively, & M. Williams (Eds.), T*he coming of age of the profession* (pp. 291-308). Boston: Heinle & Heinle.

Lyons, N. (Ed.). (1998). With portfolio in hand: Validating the new teacher professionalism. New York: Teachers College Press.

Maxwell, J.A. (1996). Qualitative research design: An interactive approach. Thousand Oaks, CA: Sage.

National Board for Professional Teaching Standards. http://www.nbpts.org.

National Commission on Teaching and America's Future. (1996). *What matters most: Teaching for America's future.* New York: Author.

Sch n, D. A. (1983). *The reflective practitioner: How professionals think in action.* New York, NY: Basic Books.

Sch n, D. A. (1987). *Educating the reflective practitioner: Toward a new design for teaching and learning in the profession.* San Francisco: Jossey Bass.

Strauss, A.L., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory, procedures, and techniques.* Newbury Park, CA: Sage.

U.S. Department of Education. (2004). New, flexible policies help teachers become highly qualified. Press release retrieved on 16 March 2004 from http://www.ed.gov/news/pressrelease/2004/03/03152004.html.

Winsor, P.J., & Ellefson, B.A. (1995). Professional portfolios in teacher education: An exploration of their value and potential. *The Teacher Educator, 31* 68-81.

Zeichner, K., & Wray, S. (2001). The teaching portfolio in US teacher education programs: What we know and what we need to know. *Teaching and Teacher Education, 17*, 613-621.

Zeni, J. (Ed.). (2001). *Ethical issues in practitioner research.* New York: Teachers College Press.

ASTL Professional Development Portfolio:
Reflecting knowledge, skills, & dispositions
related to the program outcomes

Contents of the Portfolio

The contents of the Portfolio provide evidence of Program Outcomes (NBPTS +College of Education and Human Development Principles) and National and State Standards.

I.   Professional Documentation

Program Learning Outcomes:
NBPTS + GMU Principles

1.   **Student learning**

2. **Content knowledge & effective pedagogy**

3. **Monitoring student learning**

4. **Systematic inquiry of practice**

5. **Learning community**

6. **Diversity**

7. **Change agent**

8. **Technology**

⟺

II.   ASTL Core (12 credits)

A. **Teacher as Knowing & Understanding Learning & Learners: EDUC 613 & 612. Reflection Point 1.**
(Principles 1, 3, & 5)
B. **Teacher as Designer of Curriculum & Assessment:**
EDUC 614. Reflection Point 2
(Principles 2 & 3
C. **Teacher as) Researcher with Cultural Perspective:**
EDUC 612 & 606. Reflection Point 3.
(Principles 1, 4, 5, & 6)
D.   **Teacher as Change Agent: EDUC 615. Reflection Point 4.**
(Principle 7)
E. **Reflection Point 5: Integration of Technology (Principle 8)**
F. **Synthesis Reflection: Connections and**
G. **Reflections on the Core Courses and their Relationships to the   NBPTS & GSE Program Principles**

III.   ASTL Emphasis Area (18 credits)
Content of this area to be determined by each Emphasis Area's Requirements – This section reflects alignment with National Standards and the state Standards of Learning (SOLs)

IV.   Portfolio Presentation:
Synthesizing Knowledge and Looking Ahead

George Mason University
College of Education and Human Development
ASTL Program Portfolio
Articulation with NBPTS Core Propositions, GMU Outcomes, and Content Area Standards
(©Fox & Isenberg/2003, updated 2004)