Changing Conceptions about Teaching:
The Use of Portfolios with Pre-Service Teachers

By James E. Green & Sheryl O'Sullivan Smyser

The debate over whether teaching is a science or an art is never more crystallized than when we consider how to identify good teaching, and by natural extension, how to develop good teaching. Until recently, the scientific view seemed to predominate.

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In recent years we have tried diligently to reduce the description of fine teaching to a set of scientific principles. Consequently, we have codified the technical skills of instruction into checklists, and we have developed standardized tests and minimum competency scales in great numbers. While each of these instruments might provide some valuable information, none can adequately express the artistry of fine teaching. A generic checklist can not address the wonderfully diverse qualities that may be suitably present or absent in high-quality teaching. In order to adequately describe and evaluate such diversity, the methods used will need to be more individualized to

the teacher's style, strengths, and circumstances.

Other highly subjective endeavors, such as visual art, writing, and architecture, have long used the portfolio concept to assess and display skills and growth. More recently nurses (Oeschle, 1990) have also turned to portfolios as a means of displaying both the science and art of a profession which resembles teaching in substantial ways. These professions are comfortable with admitting that the delineation and testing of technical knowledge is not sufficient to distinguish fine practitioners from the less able. Just as a good grasp of grammar is important for a writer, but is not sufficient to define his skill, so therefore, a good grasp of learning theory or subject content is important for a teacher, but an insufficient measure of teaching adroitness.

Even though the teaching portfolio is an encouraging improvement in evaluation, its function as the impetus to reflection must be recognized as the central purpose. According to Wolf (1991), "Portfolios can give teachers a purpose and framework for preserving and sharing their work, provide occasions for mentoring and collegial interactives, and stimulate teachers to reflect on their own work and on the act of teaching" (p.136).

The personal reflection that occurs in the preparation of teaching portfolios, which is thought to facilitate professional and personal growth on the part of the teacher, led the authors to question whether attitudes about teaching are actually changed as a consequence. Moreover, if the process of preparing a teaching portfolio does cause verifiable changes in attitudes about teaching, then the process itself could have considerable value as a teaching method in the pre-service education of teachers. Accordingly, the authors conducted this study to determine whether the process of preparing teaching portfolios caused meaningful changes in the conceptions about teaching held by students in teacher education programs.

Review of Literature

Portfolio assessment is proposed as a method for use with pre-service teachers for solid reasons. Recent research in theories of multiple intelligences, the consistent difficulty researchers have in conceptualizing the process of teaching and learning, individual differences that occur among highly effective teachers, cultural diversity, and the expansive differences in the nature of teaching responsibilities are a few. Some states now mandate teaching portfolios as part of their teacher induction programs, and several colleges and universities have systematically introduced and evaluated portfolios as a central element in their teacher education programs.

There are many functions and uses for portfolios, but each of these functions appears to address the larger categories of formative or summative information as advocated by Goodlad (1991). Formative purposes would include the enhancement and development of teaching skills (Collins, 1990), the encouragement of reflection

upon one's own teaching (Richert, 1990), and professional growth through collegiality (Shulman, 1988). Summative purposes would include uses for assessment and evaluation of teachers for hiring, retention and promotion. All of these many and varied uses may be made of portfolios at any time in a teacher's career, but the emphasis may shift depending upon the skill, maturity, and needs of the individual teacher.

For pre-service teachers the evaluative function of the portfolio is an important one. As prospective teachers prepare to seek professional employment, it is important that they are able to present compelling evidence of their skills. Wolf (1991) stresses that portfolios are authentic presentations within the contexts of real classrooms and school settings. Colleges such as Bowling Green State University, where portfolios are used as part of the placement procedure, have reported very favorable responses from employers on their use of portfolios as an interviewing tool (Weinberger, 1987). Additionally, several states have begun using portfolios as a regular part of their assessment procedures (Furtwengler, 1986; McLarty, 1985; Terry & Eade, 1983). These wholesale efforts have met with varied success, but do point out the continuing and increasing importance of portfolios in the assessment process.

While portfolios are valuable as an evaluation tool used by others, their use as a self-assessment technique should not be overlooked. The portfolio, when diligently constructed and used, can help a student to identify strengths and weaknesses in teaching, and begin to make plans for improvement. Berry, Kirsch, Ryan, and Uphoff (1991) offer the following summary of this all-important benefit of self-assessment:

> The portfolio system appears to hold advantages in that it removes the teacher or student from being the evaluated object and places him/her in the central role of self-evaluator, documenter and planner of professional development. (p .5)

This process function of the portfolio also was noted by all three schools in the Ohio Consortium for Portfolio Development. Biddle and Lasley (1991) report that the use of themes in portfolio construction by students at these universities allowed the students to integrate the many facets of good teaching. Portfolios also encouraged the students to consider in a fairly complex way the strengths and weaknesses that they brought to teaching and to seek out individual avenues of improvement.

Bird (1990) agrees that teaching is an incredibly complex and subtle task. He further states that very little support is given to teachers to encourage them to observe and reflect upon their teaching. Bird suggests that portfolios are a logical vehicle for this, regardless of whether the teacher is a novice or a veteran, because portfolios provide a systematic, continuous way of "planning, supporting and monitoring a schoolteacher's professional advance" (p. 244).

A final important benefit of portfolio use is the encouragement of professional dialogue which is such a natural part of the portfolio process. Richert (1990) noted

that the opportunity to engage in conversations about teachings with colleagues is often cited by novice teachers as a particularly helpful means of growth during their first year of teaching. A structured occasion to reflect upon their teaching was also cited as valuable by these beginning teachers. Portfolios provide just such an opportunity, and they also aid the teacher in remembering more fully what happened in the classroom so that the reflection and professional dialogue which follow are of a deeper, more thoughtful nature. Through the use of the portfolio, and with the help of a mentor or peer, the beginning teacher is able to initiate the personal reconstruction of knowledge which is central to the process of become a teacher.

This construction of the meaning of good teaching is doubly important for pre-service teachers who may not be equipped to discuss in any sort of reflective way their strengths and weaknesses in the classroom. Bird (1990) noted that having the documents of a portfolio available can provide a focus to mentoring opportunities, and encourage a depth of thought which would be difficult to attain otherwise.

Finally, pre-service teachers are at a critical point in their careers in which the direction of their teaching, and perhaps even their survival in the profession, is being decided. Indeed one of the goals for strengthening initial teacher preparation which was put forth by the Association of Teacher Educators in the report entitled *Restructuring the Education of Teachers* (1991) is that teacher preparation programs should include ways to help pre-service teachers begin their career-long professional development. Portfolios provide a natural way for pre-service teachers to initiate, plan, and continually re-evaluate their professional choices. While the benefits of portfolios appear to be many, a lingering question remains for teacher educators: does the use of teaching portfolios produce measurable affects on how pre-service teachers conceive the meaning of good teaching?

Method

Introduction

In response to this question, the investigators sought to determine whether the use of teaching portfolios affects the meaning given to basic concepts in education by pre-service teachers. Specifically, the investigation focused on whether the use of teaching portfolios alters meaning that prospective teachers give to the following basic concepts: **teacher**, **student**, **classroom management**, **evaluation of teaching**, **professional growth**, and **reflective thinking**.

Subjects

The investigators conducted their study with pre-service teacher education students enrolled at two very different institutions: Ball State University, a large, public, comprehensive, midwestern institution; and University of Redlands, a small, private, liberal arts institution in Southern California. An assessment instrument was administered (pre-test and post-test) to an experimental group and a

control group in the fall semester, 1992-93, and again in the spring semester, 1992-93. The fall semester experimental group and control group numbered 32 and 36 respectively; the spring semester experimental group and control group numbered 17 and 20 respectively. In the fall semester, the experimental and control groups were comprised of equivalent numbers of students from both institutions. In the spring semester, the experimental group came from Ball State University and the control group from the University of Redlands. Students in the control group were enrolled in pre-service teacher education courses. However, in the experimental group students were guided in the preparation of teaching portfolios.

Instrument

The investigators chose to use the semantic differential technique to measure shifts in meaning that might occur as the result of students being guided in the preparation of their teaching portfolios. Numerous studies have established the validity of the semantic differential as a procedure for measuring meaning, and the method has proven useful for assessing changes in attitudes and conceptual understanding (Kerlinger, 1973). The orginator of the semantic differential method, C.E. Osgood (1957), demonstrated that the meaning of any concept has three dimensions: **evaluation, potency,** and **activity.** These dimensions are derived by differentiating the meaning of the concept through the use of graphic rating scales with opposing, or "bi-polar," adjectives at either end of the scale. The scales represent the "semantic space" for the concept. Using values of one through seven for each of the bi-polar terms, each scale is given a quantitative value relative to the concept. Then factor analysis is used to yield the dimension of semantic space. In this fashion, we can plot the meaning an individual gives to a particular concept.

The semantic differential instrument developed by the investigators for use in this study included six concepts with nine scales for each concept. The scales were selected from a list of bi-polar terms which had been validated in a thesaurus study reported by Osgood and his colleagues (1957).

Procedure

The investigation was conducted in two phases: the fall and spring semesters. In the first phase, the investigators sought to establish that the control group and the experimental group were reasonably similar with regard to the original meaning they gave the concepts identified for the study. Both groups completed the semantic differential instrument. The experimental group's pre-test results were compared to the control group's pre-test results by calculating mean values for each scale in the instrument, and a series of t-tests (two tailed) was performed. Of the 54 t-tests performed, only eight scales revealed statistically significant differences ($\underline{p}<.05$). Although the two groups were not perfectly congruent in the meaning attached to the concepts measured, enough similarity existed that the two groups were judged reasonably comparable.

Throughout the fall semester, the students in the experimental group were

guided through the process of preparing their portfolios. The portfolio format was designed by the investigators, following Wolf's (1991) cautions, to offer substantial guidance in the format used, but substantial latitude in the choices made of specific documents to include. Each student's portfolio, therefore, was required to contain five sections. These sections were entitled: **Introduction**, which provided background information about the student, such as a resume or autobiography;**Environment**, which demonstrated how the student created a rich learning environment as evidenced by such items as pictures of bulletin boards;**Instruction**, which included evidence of planning and execution of actual teaching; **Individualization**, which displayed how the student met the needs of the individuals in the classroom through such methods as diagnostic tests or grouping strategies; and **Integration**, which provided proof of growth through such items as evaluations or development goals.

In each of these sections, students were required to provide a short reflective statement about the section, but all other items included in each section were at the complete discretion of the student. Examples of suitable items to include were provided, as well as samples of portfolios done by previous students. Opportunities for collegiality and mentoring were designed into the portfolio process by putting students into portfolio pairs for periodic discussion of their portfolios, and through scheduled individual sessions with the course instructor to offer feedback about the progress of the portfolio.

At the end of the fall semester both the control and experimental groups completed the semantic differential instrument again as a post-test. The pre-test and post-test results from the control group were then compared. This comparison allowed investigators to observe whether any shifts in meaning occurred in the control group. Again the investigators performed t-tests (two tailed) on the mean values for each of the 54 scales included in the instrument. Of the 54 t-tests performed, only five yielded differences which were statistically significant ($p <$ .05). Although some statistically significant changes did occur in the control group, the preponderance of mean values did not change significantly. The investigators concluded that meaning given to the six concepts by the pre-service teachers in the control group did not change appreciably during the semester that the study was conducted. Table 1 summarizes the results of the pre-test and post-test comparisons for the control group and the experimental group and the pre-test comparison between the control group and experimental group.

In the final step of the first phase of the investigation the pre-test and post-test results from the experimental group were compared. Since students in the experimental group were guided in the preparation of teaching portfolios, the comparison allowed the investigators to test their hypothesis that the portfolio assignment would influence shifts in meaning. Comparison was made by performing t-tests (two tailed) of the differences between the mean values for each of the 54 scales from the semantic differential instrument. In this comparison 34 of the 54 scales yielded statistically significant results ($p <$ .05). Table 1 reveals that the

Table 1
Control Group and Experimental Group
Pre-test and Post-test Comparisons (Fall 1992)

Comparisons Using t-tests	Number of Scales with Significant Difference
Control group pre-test to experimental group pre-test	8
Control group pre-test to control group post-tests	5
Experimental group pre-test to experimental group post-test	34

Table 2

Statistically Significant Differences between Pre-test and Post-test Results for the Experimental Group (Fall 1992)

Concept of "Teacher"

Scale/Polar Terms	Pre-test Mean	Post-test Mean	F Value
Energetic/Inert	6.03	5.53	2.35
Active/Passive	6.09	5.49	2.43

Concept of "Student"

Scale/Polar Terms	Pre-test Mean	Post-test Mean	F Value
Intelligent/Unintelligent	5.72	5.23	1.81
Successful/Unsuccessful	5.60	4.78	2.71
Competitive/Cooperative	4.84	3.95	1.47
Active/Passive	5.41	4.70	1.24

Concept of "Classroom Management"

Scale/Polar Terms	Pre-test Mean	Post-test Mean	F Value
Organized/Unorganized	6.03	5.28	2.23
Sociable/Unsociable	5.88	4.98	2.50

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Table 2 (Continued)

**Statistically Significant Differences between Pre-test and Post-test Results
for the Experimental Group (Fall 1992)**

Concept of "Evaluation of Teaching"

Scale/Polar Terms	Pre-test Mean	Post-test Mean	F Value
Meaningful/Meaningless	6.06	6.78	1.73
Beneficial/Harmful	6.19	6.85	2.59
Useful/Useless	6.16	6.85	2.96
Constrained/Free	3.19	1.48	1.28
Convergent/Divergent	4.25	1.38	1.28
Concise/Diffuse	4.63	6.53	1.34
Difficult/Easy	4.81	6.53	1.76
Active/Passive	5.31	6.68	2.36
Complex/Simple	4.78	6.68	2.34

Concept of "Professional Growth"

Scale/Polar Terms	Pre-test Mean	Post-test Mean	F Value
Meaningful/Meaningless	6.03	6.88	10.06
Organized/Unorganized	5.88	6.78	2.13
Important/Unimportant	6.41	6.90	3.53
Constrained/Free	3.06	1.28	4.53
Obstructive/Helpful	2.16	1.78	5.34
Competitive/Cooperative	4.22	1.55	1.40
Active/Passive	5.81	6.80	3.34
Energetic/Inert	5.91	6.83	2.64

Concept of "Reflective Thinking"

Scale/Polar Terms	Pre-test Mean	Post-test Mean	F Value
Lucid/Obscure	4.98	6.58	1.58
Thoughtful/Vacuous	5.91	6.78	2.13
Useful/Useless	6.22	6.85	3.24
Convergent/Divergent	4.41	1.30	3.23
Obstructive/Helpful	1.84	1.18	3.12
Deep/Shallow	5.91	6.78	2.04
Laborious/Effortless	4.66	6.65	2.30
Active/Passive	5.72	6.40	1.50
Complex/Simple	4.91	6.65	2.28

experimental group changed much more than the control group in regard to the meaning given to the selected basis concepts in education. Table 2 contains lists of the scales, or bi-polar terms, for each concept for which the differences occurred in the experimental group.

In the second phase of the investigation, which was conducted during the following semester, the procedures were repeated with different subjects. However, when the pre-test results of the experimental group and control group were compared, investigators observed a total of 26 statistically significant differences ($p<.05$). Consequently, the investigators could not conclude that the two groups were reasonably similar at the beginning of the semester. Indeed, examination of the responses on the scales revealed that the experimental group's scores were charac-teristically higher than the control group's scores, leaving less room for positive shifts in meaning to occur during the course of the semester.

The investigators were not surprised, then, that the second phase of the study produced results that were noticeably different from the previous phase. In the second phase, the experimental group's pre-test and post-test comparison produced only one instance of a shift in meaning.

Discussion

The results from the study are interesting from several perspectives. When both the experimental group and the control group were observed to be reasonably similar with respect to the meaning they gave basic concepts in education, very noticeable shifts in meaning occurred after the training in the use of teaching portfolios. In the first phase of the study, statistically significant differences ($p<.05$) occurred in each of the scales for three concepts: **evaluation of teaching**, **profes-sional growth**, and **reflective thinking**. Moreover, the shifts that did occur tend to conform to the professional values espoused by advocates of teaching portfolios. The students who were guided in the preparation of teaching portfolios revealed a greater appreciation for the value and power of **evaluation of teaching**, **profes-sional growth**, and **reflective thinking**. In addition, the students conceptualized all three as more active processes. In other words, students saw **evaluation of teaching** as more meaningful and beneficial, although more complex and difficult to accomplish. And, they saw the process of evaluating teaching as one that involves their active participation. In addition, they saw **professional growth** as more important, and the concept acquired a more active and cooperative connotation. Similarly, **reflective thinking** became a more useful process, as well as more complex and active. It is important to note that for the concepts of **evaluation of teaching**, **professional growth**, and **reflective thinking**, virtually all of the scales showed statistically significant changes with these shifts being toward attitudes teacher educators hope to instill in their students. In each of these three areas, students who had used portfolios saw the concepts as more valuable, more potent

and more active than they had at the beginning of the semester.

Scattered unforeseen shifts in meaning also occurred. Close examination of all the changes revealed a few surprising findings. The concepts of **teacher**, **student**, and **classroom management** also registered statistically significant shifts in meaning ($p < .05$) for a few of the adjective pairs. However, the shifts, while not as numerous as in the other areas, indicated that the concepts acquired a more negative connotation. In particular, the concept of **teacher** was seen as less energetic and more passive; **student** was seen as less intelligent, less successful, more passive, and less competitive, and **classroom management** was seen as less organized and less sociable. The investigators were unable to account for the negative shifts in meaning. However, they noted that the students in the experimental group all were participating in field experiences. One may speculate that the early laboratory experiences resulted in students losing some of their naiveté, and their conceptual understanding of **teacher**, **student**, and **classroom management** reflected their encounters with the real world of professional practice.

However, the measurable shifts in meaning that were observed in the first phase of the study must be interpreted tentatively, given the inconclusiveness of the second phase. Even so, positive shifts that did occur in the first phase suggest several implications for the use of teaching portfolios by pre-service teachers.

Conclusion

The general conclusion to be drawn from the study clearly supports the use of teaching portfolios in pre-service teacher education programs as a strategy to influence positive changes in attitudes and beliefs concerning **evaluation of teaching**, **professional growth**, and **reflective thinking**. The process of self assessment causes students to reflect personally on the meaning of good teaching. Organizing the evidence which documents one's strengths and weaknesses as a teacher into a vivid and coherent account enables one to value planning for professional growth. And, maintaining professional dialogue with peers and mentors creates a more collegial approach to continuing professional development.

Students who were willing to put forth the time and personal effort needed to use their portfolios as a catalyst for personal improvement found the experience very valuable. One student, a first year intern, had this to say about her portfolio experience: "I was in a rut and I was a brand new teacher. That's the scary thing; that it can happen so fast. I was in the grave professionally. The portfolio helped me see that and begin to change." Very few other teaching methods can produce the same amount of reflection and self-directed growth for a student just beginning on the road to becoming a teacher. And very few methods can demand so much of a student that changes in fundamental attitudes about teaching are made. Portfolios show great promise in helping our pre-service teachers become the self-directed, reflective professionals so vital to our nation's schools.

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