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**Development and implementation of a student portfolio  
assessment model for use in the secondary vocational education  
classroom**

**Johnson, Sharon Ann, Ph.D.**

**The University of North Carolina at Greensboro, 1993**

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DEVELOPMENT AND IMPLEMENTATION OF A STUDENT PORTFOLIO  
ASSESSMENT MODEL FOR USE IN THE SECONDARY  
VOCATIONAL EDUCATION CLASSROOM

by

Sharon Ann Johnson

A Dissertation Submitted to  
the Faculty of The Graduate School at  
The University of North Carolina at Greensboro  
in Partial Fulfillment  
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Doctor of Philosophy

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Approved by

Mary G. Morgan  
Dissertation Advisor

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The purpose of this study was to introduce a student portfolio assessment model via staff development activities and to assist secondary vocational teachers in implementing the use of student portfolios in their classrooms. Three objectives were selected for this study: (a) assess effectiveness of staff development activities for secondary vocational teachers related to use of portfolio assessment; (b) describe experiences of vocational teachers and students in the implementation of the portfolio assessment mode; and (c) assess the implementation of student portfolio assessment in terms of student and teacher outcomes in the secondary vocational classroom.

Participants in this study were four secondary vocational teachers: two in business education and two in home economics. Staff development was selected as the vehicle for introduction of the student portfolio assessment model over a 10-hour period. Components of the portfolio assessment model used in this study were developed by Dr. Judy Arter and Vickie Spandel in collaboration with other researchers. This model was selected because it was developed for using portfolios of student work in instruction and assessment. The researcher created the graphic display of the model that illustrated teacher and/or student

responsibility for each component, and connected the components to show the relationship between instruction and assessment.

Measurements of participants' knowledge of portfolio assessment and their current concerns related to student achievement were used as stage one and stage two reflections. The interview questions for both students and teachers, teacher log, and student survey were designed by the researcher and were summarized by expected student and teacher outcome. Student surveys were analyzed by descriptive statistics. Open-ended questions were summarized and related to the expected student outcome.

The evidence from the four classrooms suggested that the student portfolio assessment model used in this study was successful for integrating assessment and instruction. The teacher and student outcomes that were most frequently identified in this study were students evaluating their own work, assessment linked to instruction, frequent communication between teachers and students, documentation of students' learning, and positive student attitudes toward portfolio assessment.

APPROVAL PAGE

This dissertation has been approved by the following committee of the Faculty of The Graduate School at The University of North Carolina at Greensboro.

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November 8, 1993  
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This dissertation is dedicated in memory of my grandparents, Frank and Sudie Tingen, and to my mother, Sue Johnson. Their love and support has made me the person I have become.

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CHAPTER I  
INTRODUCTION

The issue of the utility of tests in measuring what students actually know has stimulated much debate and a movement toward alternative, more authentic assessment approaches. There is widespread belief that the multiple-choice test format, which tests factual knowledge, has failed to capture the breadth and depth of what students know and what teachers are doing in their classrooms (Smith & Stevenson, 1992). It is expected that assessment in the 1990s will be increasingly linked to instruction. That is, "assessment will not be separate from instruction but it will help a student and a teacher do better, rather than telling them how they did at the end of a course" (Anrig, 1992, p. 4).

Problems Associated with Testing

Approximately 100 million dollars and 20 million student days (National Commission on Testing and Public Policy, 1990) are spent each year on educational testing; yet there is widespread dissatisfaction with the present educational system among educators, parents, policymakers, and the business community. Efforts to reform and restructure schools, stemming from A Nation at Risk (National Commission for Educational Excellence, 1983) and other reports critical of the



quality of American education, have focused attention on student achievement outcomes and the role of assessment in school improvement (Aschbacher, 1991). Achievement has been defined by what achievement tests measure; and mathematical models, e.g., classical test theory and item response theory are used to refine tests and control how they work (Paulson & Paulson, 1990).

For the past 20 years, the National Association of Black Psychologists, the National Education Association, the National Association for the Advancement of Colored People, the National Association of Elementary School Principals, and the investigative staff of Ralph Nader have called for varying reforms in standardized tests which they believe are grounded in standards of cultural knowledge of one group: white, middle class (Haney, 1984; Williams, Mosby, & Hinson, 1976). These groups view standardized testing as yet another means of maintaining the social and economic repression of minorities (i.e., African Americans, Native Americans, Asians, and Hispanics).

In the last few years, the review of educational headlines in America reveals the level of dissatisfaction with the current means of assessing students' progress (LeMahieu, 1991). Traditional tests that are given once or twice a year do not shed much light on a student's ability to make progress over time (Wiggins, 1991). Educators have criticized the measures used to monitor student performance

because they fail to assess significant learning outcomes (Baker, Freeman, & Clayton, 1991). It is argued that without a clear window on students' complex thinking and problem-solving skills, not only do educators fail to evaluate students and instructional programs adequately, but they also communicate to teachers, parents, and students that such untested skills are not very important (Baker et al., 1990).

Multiple-choice measures have been relied upon due to their ease of administration and scoring as well as the extensive test theory and statistical knowledge base that supports their use. Increasing numbers of researchers have expressed discontent with these types of "bubble in the circle" tests (Haney & Madaus, 1989; Miller-Jones, 1989; Shepard, 1989). Critics have noted that most commonly used tests, whether typical standardized norm-referenced tests, objective-based tests, or many of the tests created by teachers to grade students, tend to emphasize mere recall of knowledge and provide little information about the level of student understanding or quality of thinking (Nickerson, 1989).

A related concern is that the amount of testing done decreases the amount of time available for instruction. For example, teachers spend considerable "instructional" time teaching specific objectives included on tests and preparing students to take tests (Canner, 1992). Students are being

tested to evaluate requirements for federal programs such as Chapter I, for placement into specialized programs, and to meet state required mandates for norm-referenced, curriculum-based performance, end-of-course, and writing tests (Smith & Stevenson, 1992). A number of researchers have found that accountability pressures encourage teachers and administrators to focus planning and instructional effort on test content and to devote more and more time to preparing students to do well on the tests (Dorr-Bremme & Herman, 1983; Herman & Golan, 1991; Kellaghan & Madaus, 1991; Shepard, 1990a; Smith & Rottenburg, 1991). Many of these researchers conclude that the time focused on test content has narrowed the curriculum by overemphasizing basic-skill subjects and neglecting higher-order thinking skills.

In the Greensboro Public School system in North Carolina alone, 13 tests are given throughout the year, and the State Department of Public Instruction is adding at least two more tests to that list. That translates into approximately 30 days during the school year that some form of state mandated competency, norm-referenced achievement, criterion-referenced, or diagnostic test is being administered to students in kindergarten through 12th grade. Thus, the perception by the public is that considerable time is being spent on testing.

Much of the research supporting traditional testing has been based on standardized tests; Herman (1992) concluded

that such tests have a negative impact on program quality. These tests have a deleterious influence on the classroom in terms of how curriculum is presented and on how information is delivered, learned, and retained. Such tests measure learning in an artificial, decontextualized manner that is removed from the ways students actually learn and their need to apply knowledge outside the classroom (Resnick & Klopfer, 1989). Teachers tend to teach to the test and thereby narrow the delivery of curriculum content. Herman and Golan (1991) have noted that such narrowing will likely have greatest impact on schools serving at-risk and disadvantaged students, where there is the most pressure to improve test scores.

During the 1980s, discussions of testing at the secondary level focused on high-stakes testing. For example: Should a single test be used for graduation? Should test scores be used to direct students into specialized educational and/or vocational tracks? Should a test score determine college admission (Plato, 1992)? Standardized tests were used at a local level for the purposes of pupil tracking, selection for special programs, and instructional planning. However, the traditional assessments of the 1980s were not designed to inform or benefit teachers, students, or parents; instead they were designed to provide administrative means of accountability used in the allocation of

funds (Winograd & Paris, 1988). Unanticipated consequences of this trend toward testing included rising test scores (i.e., students scoring above the national average) and a narrowing of instruction to match the domain of items on achievement tests (Linn, Graue, & Sanders, 1990; Shepard, 1990). However, it was during this period that national, state, and local agencies launched comprehensive reexaminations of the outcomes for which schools were to be held accountable. These studies asked: "What will students need to know and be able to do to contribute economically and live comfortably" (Stiggins, 1991, p. 267). Critics have suggested that assessment needs to be modified to match more closely the tasks in which students engage in their classroom experience (Gomez, Graue, & Block, 1991).

Since the influence of testing on curriculum and instruction is now widely recognized, policymakers, testing directors, curriculum specialists, teachers, and others are turning to alternative assessment methods as a tool for school improvement (Aschbacher, 1991). Wiggins (1992) concluded that circling correct answers to questions only test-makers care about is not knowing, nor is it the aim of teaching. Therefore, educators are exploring alternative assessments as a means to reshape assessment, and to provide students with opportunities to demonstrate what they can do with a better understanding of why they are doing it.

### Alternatives to Testing

While no one is predicting the demise of standardized tests (Lueker-Harrington, 1991), alternatives to standardized testing have received much attention in the school reform movement. The most popular alternative assessment vehicle is performance-based assessment. The term serves as an umbrella for a variety of measures including essays, projects, videotapes, and portfolios. The alternative assessments are used to test higher-order thinking skills many believe are beyond the reach of multiple-choice tests. Several presenters at the December, 1990, Association for Supervision and Curriculum Development miniconference on "Redesigning Assessment" suggested that alternative assessments can act as a lever to move schools away from the factory-based delivery-of-facts model to a new paradigm in which students are active learners and questioning thinkers (Staff, 1991, p. 5). Through performance-based assessment, teachers and other school professionals hope to locate the means to more closely integrate curriculum, instruction, and assessment for all students (Gomez, Graue, & Block, 1991).

Performance-based assessment has been viewed as a lever to promote the changes needed to address current problems associated with multiple-choice testing. Among these changes are a redefinition of learning and a different conception of the place of assessment in the educational process. Learning

does not mean memorizing facts; it means the ability to use facts appropriately by weighing conflicting values, arguing with reasoned propositions, selecting facts, using evidence, and thinking clearly (Mitchell, 1992). If students are to increase their ability in these areas, both they and their teachers need constant feedback in a form both can understand. Assessment thus becomes a part of instruction.

The desire to ensure that students graduate with more than basic skills has fueled interest in performance assessment. Increasingly, states are looking to performance-based assessment to obtain a more complete picture of students' abilities.

Mehrens (1992) lists five reasons performance based assessment is needed:

1. old criticisms of multiple choice tests,
2. belief of cognitive psychologists that assessment of procedural knowledge requires formats other than multiple choice questions,
3. increased concern that multiple choice tests delimit the domains that should be assessed,
4. wide publicity of the Lake Wobegon effect of teaching too closely to the tests, and
5. claims that there are dangerous instructional/learning effects of teaching to multiple choice formats. (p. 6)

Performance-based assessment has been used by classroom teachers for a long time in one way or another. Before the advent of the paper and pencil test, teacher judgment dominated educational assessment (Stiggins, 1991). During the

recent period of paper-pencil domination, teachers have continued to rely on observation and judgment for classroom assessment. Teachers have observed their students in class, held conferences with students and parents, and instructed students to produce a product (i.e., written story, interior design project, or sewing project).

Performance assessment has re-emerged in recent years with a new look that has captured the attention of educators. The new look is the many vehicles under the performance-based assessment umbrella that can be used by a classroom teacher. One of the vehicles receiving much attention by educators has been portfolio assessment.

Portfolio assessment appears to be one of the more popular means for addressing some of the problems with assessment. Valencia (1990) asserted that portfolios capture a richer array of what students know and can do than is possible with multiple-choice tests. Furthermore, portfolios allow students to become active participants and assessors of their own learning.

In education there has tended to be more interest in the product than in the process of learning. Portfolios portray the processes by which students produce their product. While it is important that students utilize efficient strategies for solving problems as well as getting the right answer, it is also important for students to be able to do



such things as monitoring their own learning so that they can adjust what they do when they perceive they are not understanding (Jongsma, 1989; McLean, 1990).

Educators say they want students to be critical thinkers and problem solvers, yet they test knowledge. Assessment, therefore, needs to be aligned with what teachers and others consider important outcomes for students in order to communicate that message to students, parents, and the community. This growing concern for outcomes has given rise to a clearer sense of what educators want those outcomes to be, which in turn has given rise to the need for, and the availability of, a broader array of assessment techniques. The use of portfolios in the classroom can measure higher-order thinking skills and provide continuous, ongoing information on how students are doing in order to give effective feedback to students and encourage students to observe their own growth (Myers, 1987; Wolf, 1988).

Business education, home economics, and special population courses, like other vocational subject areas, have had performance criteria for judging students' work, but have not used performance-based assessment to help students learn problem solving or develop higher-order thinking skills. Although VoCATS (Vocational Competency Achievement Tracking System) is intended to measure such skills, it primarily remains another form of multiple-choice, "bubble the correct answer" test.

Stiggins (1991) maintained that educators should integrate assessment with instruction in a way consistent with both current theories of instruction and goals for students. In other words, the need exists to develop assessment techniques that, in their use, improve achievement and not just monitor it (Arter & Spandel, 1992). Portfolio assessment is seen as one potential way to accomplish this.

Recent research on portfolios has described their positive impact upon teachers and students in classrooms from kindergarten through college (Carter & Tierney, 1988; Elbow & Belanoff, 1986; Levi, 1990; Reif, 1990; Valencia, 1990). As ongoing, systematic collections of students' works, portfolios represent a wide range of authentic course work activities and processes, provide a framework for individualizing instruction and self-assessment (Tierney, Carter, & Desai, 1991), and allow collaborative opportunities between the classroom teacher and students, thus enhancing an understanding of various subject matter development (Johnston, 1987). Moreover, portfolios establish a record of a student's quantitative and qualitative performance over time, and they encourage students to participate in subject matter experiences that involve them in instructional, noninstructional, interactive, and individualized learning settings.

If efforts at school reform are to take root and effect lasting change, traditional forms of testing will have to

yield to models of assessment that are a more integral part of the learning process. Whereas traditional testing is strongest at measuring the mastery of facts and the recall of information, performance-based assessment is meant to provide opportunities for students and teachers to learn about the standards of good work and link assessment with instruction in the classroom. Closing the gap between instruction and assessment will help both teachers and students reflect on and understand their own strengths and weaknesses as well as encourage students to assume more responsibility for their own learning.

#### Purpose of the Study

The purpose of this study was to introduce a student portfolio assessment model via staff development activities and to assist secondary vocational teachers in implementing the student portfolio assessment model in their classroom. The model will be designed to integrate instruction and assessment in the vocational education classroom at four high schools in the Greensboro Public School system.

Staff development activities were the means for introducing the portfolio assessment concept to the teachers. It was through these activities that vocational teachers explored the uses of portfolio assessment. The teachers defined a model for implementation of student portfolios in one of their courses. Instructions about how to implement

the model in their classrooms were provided by the researcher.

Qualitative and quantitative evaluation methods were used to evaluate the implementation of the student portfolio assessment model. Data were gathered from staff development activity notes, interviews with teachers and students, student surveys, teachers' logs, description of participants and sites, and anecdotal records. In addition, follow-up activities were planned for the purpose of making recommendations for future use of the student portfolio assessment model, and for teachers to share their experiences of implementing the model with others.

Specific objectives of the study were to:

1. Assess effectiveness of staff development activities for secondary vocational teachers related to the use of portfolio assessment.
2. Describe experiences of vocational teachers in the implementation of the portfolio assessment models they developed.
3. Assess the implementation of student portfolio assessment in terms of student and teacher outcomes in the secondary vocational classroom.

#### Significance of the Study

The impetus for this research grew out of the movement toward portfolio assessment by the State Department of Public

Instruction in Raleigh, North Carolina. The new North Carolina end-of-grade testing program includes such changes as both traditional (multiple choice) and nontraditional (open-ended and performance-based) test questions, and an instruction-based evaluation component (e.g., item-banks, observations, portfolios). The lead Home Economics Consultant and local vocational directors stated that no portfolio assessment models were being tested in vocational education at the state level and supported the need for this study.

This study was important to undertake because it introduced vocational teachers to a new assessment alternative; research and development in vocational education has yet to explore this method of assessing student performance. Other benefits of the study included providing teachers with a new means of assessing change in student behavior (e.g., eating habits, cooperation, and responsibility), and utilizing another method of documenting student strengths, weaknesses, and diversity. Teachers were introduced to a new method of aligning curriculum, instruction, and student performance. Lastly, the teachers were provided the tools to document the processes which students use to produce the final product.

The portfolio has captured educators' imaginations, yet its aptness remains unproven (Bird, 1990). So far, little is known about adapting methods used for portfolio assessment in art, design, law, and writing to fit assessment of

students in vocational education. As student portfolios emerge and are defined in vocational education, they too will have their own unique characteristics.

If the goal of educators is to produce students who have a deep understanding of subject content, a sense of personal efficacy, and the abilities to think critically, make decisions, solve problems, communicate, and collaborate with others, then assessment methods should reflect those values. Portfolio assessment is an assessment tool for achieving these objectives in addition to the current multiple-choice tests.

#### Definitions

1. Alternative assessment: variously called authentic assessment, performance assessment, and dynamic assessment (Wiggins, 1989).

2. Performance-based assessment: the umbrella term for a variety of measures--including essays, portfolios, projects, and videotapes--that can be used to test higher order thinking skills many believe are beyond the reach of multiple choice items. Student completes or demonstrates the behavior the assessor wants to measure.

3. Authentic assessment: performance is assessed in a context more like that encountered in real life. Consists of task educators want students to be good at doing. Student not only completes or demonstrates the desired behavior in the classroom, but also applies it in real life.

4. Portfolio assessment: "a purposeful collection of student work that tells the story of the student's efforts, progress, or achievement in a given area(s)" (Arter & Spandel, 1992, p. 36). This collection must include student participation in selection of portfolio content, the guidelines for selection, the criteria for judging merit, and evidence of student self-reflection.

5. Composite portfolio: "a purposeful collection of student work that tells the story of a group's efforts, progress, or achievement" (Arter & Spandel, 1992, p. 38).

CHAPTER II  
REVIEW OF LITERATURE

The purpose of this study was to plan and implement staff development activities which would assist secondary vocational teachers in implementing a student portfolio assessment model in their classrooms. This chapter addresses the need for portfolio assessment, defines student portfolios, and describes approaches to portfolio assessment. Research related to development and use of portfolio assessment as well as current models was explored.

The Need for Portfolio Assessment

The 1980s brought about a move toward assessment reform. As the stakes get higher for school reform, restructuring, and teacher accountability, the reliance on measures that teachers neither value nor have had a hand in designing becomes more and more unacceptable (Vavrus, 1990). As school restructuring gains momentum, educators are beginning to look at what other countries, organizations, and institutions are doing. One element observed in schools in other countries and businesses in this country is the move toward performance evaluation.

The desire to ensure that students graduate with more than basic skills, i.e., with the ability to use skills to



solve novel problems, work cooperatively in groups, or synthesize knowledge across disciplines has fueled interest in performance assessment (O'Neil, 1992). Both the National Assessment of Educational Progress (NAEP) and the College Board's Scholastic Aptitude Test (SAT) are beginning to favor open-ended questions and other performance items (Lueker-Harrington, 1991).

New beliefs of student learning which gained momentum in the 1980s are called by some a constructivist perspective. In this perspective students are seen as active constructors of their own view of the world around them, including the subject matter in the school curriculum. The consequence of this view of learning is that educators can no longer use an atomistic model for assessment. According to cognitive researchers, meaningful learning is reflective, constructive, and self-regulated (Brnsford & Vye, 1989; Davis & Maher, 1990; Wittrock, 1991). Educators must assess the level of complexity of student understanding, not just the number of facts that students can pick out of a multiple-choice test (Wilson, 1992).

The strength and frequency of calls for authenticity in assessment are evidence of the influence of such a view of student learning. Assessment is authentic when teachers examine directly student performance in real-life situations and circumstances (Wiggins, 1990). The call for authentic

assessment coincides with a growing political demand for state and national frameworks that delineate standards for student achievement. The dilemma is that while demand for comparable school assessments is increasing, the difficulty of achieving such comparability is also increasing because of the complexity required of assessment that can be labeled authentic. The burden created by the greater complexity of new assessments is an advantage, because it necessitates the integration of the classroom teacher into the assessment system (Wilson, 1992). Thus it may be possible to use the political pressure for more assessment to motivate an intense exercise in staff development that will disseminate the new views of student learning and assessment throughout the ranks of teachers and contribute to their professional self-esteem by giving them a leading role in the assessment of their students, and hence in their own assessment.

New theories of learning, instruction, and assessment also point to the importance of a close connection between assessment and the situations in which teaching and learning normally take place (Au, Scheu, Kawakami, & Herman, 1990). Assessment should be designed to be as close to ongoing classroom activities as possible. An approach suggested for achieving this is the use of portfolios showing each student's accomplishments in a given subject(s) area(s).

The authentic assessment movement and the closely associated efforts to develop performance assessment and

portfolio assessment all have, in one way or another, sought to bridge the gap between external examinations and teacher grades (Wilson, 1992). The aim is to allow teacher input to make the assessment more authentic, while maintaining certain standards of comparability and scrutiny.

Portfolios offer a way of assessing student learning that is quite different from traditional methods. Whereas achievement tests offer outcomes in units that can be counted and accounted, portfolio assessment offers the opportunity to observe students in a broader context: taking risks, developing creative solutions, and learning to make judgments about their own performance (Paulson, Paulson, & Meyer, 1991). Portfolios can transform assessment into an essential part of the instructional program (Meisels & Steele, 1992).

The benefits of portfolios are apparent when compared to traditional assessment practices, especially the imposition of a narrow range of standards. Figure 1 summarizes the differences in assessment processes and outcomes between portfolios and standardized testing practices.

Richard Stiggins, who directs the Center for Classroom Assessment at the Northwest Regional Educational Laboratory, says:

We now realize that without performance assessment methodology, it's not possible to create a complete portrait of student achievement. You cannot evaluate

Figure 1

Assessment Using Portfolios vs. Standardized Testing  
Summary of differences in Assessment Processes and Outcomes

Portfolios	Standardized Tests
represents classroom work	assesses students across limited range of skills
engages students in assessing their progress	mechanically scored or scored by teachers
measures each student's achievement while allowing for individual differences	assesses all students on the same dimensions
collaborative approach to assessment	assessment process is not collaborative
has a goal of student self-assessment	student assessment is not a goal
addresses improvement, effort, and achievement	addresses achievement only
links assessment and teaching to learning	separates learning, testing, and teaching

Note. From Portfolio Assessment in the Reading-Writing Classroom (p. 44) by R. J. Tierney, M. A. Carter, & L. E. Desai, 1991, Norwood, MA: Christopher-Gordon.

writing without asking students to write, and you cannot evaluate whether a student has learned a foreign language without asking that student to speak. (Stiggins, 1992, p. 36)

Portfolios represent a wide range of student work and allow students to be actively involved in the assessment process. Tierney (1991) found after implementing a portfolio assessment model in 50 classrooms that:

1. students appear empowered,
2. students take ownership of the portfolios,
3. assessment becomes collaborative rather than competitive,
4. parents are engaged first-hand in seeing what students are achieving,
5. teachers have available to them records of what students are actually doing,
6. teachers obtain a better picture of their students across time,
7. teachers have a vehicle for pursuing assessment practices that are student-centered and focus on helping the learners assess themselves, and
8. teachers are better informed about what each individual child has achieved. (p. 51)

Student portfolios are an intersection of instruction and assessment. Portfolios are neither instruction nor assessment; they are both instruction and assessment. Portfolio assessment gives teachers the opportunity to adopt alternative ways of thinking about what they do in the classroom and how they measure student learning (Paulson & Paulson, 1990).

Portfolios provide a complex and comprehensive view of student performance that encourages educators to look at

learning as a complex process. They allow educators to define achievement in broad, adaptive terms rather than narrow, restrictive ones. Portfolios also provide a complex and comprehensive view in a context where instruction and assessment are inseparable.

#### What is a Student Portfolio?

No other form of performance assessment is as widespread as portfolio assessment (Mitchell, 1992). Portfolios can be used in any subject area. They are used from kindergarten to the graduate level.

A portfolio provides a complex and comprehensive view of student performance in the context of a specific subject area. It is a portfolio when the student is a participant in, rather than the object of, assessment. Above all, a portfolio is a portfolio when it provides a forum that encourages students to develop the abilities to become independent, self-directed learners (Paulson et al., 1991).

Portfolios have two basic components: student work produced over a period of time, selected by both the student and the teacher; and student comments (self-reflection) on his/her work, also developed over a period of time. Kilmer (1990) and Eresh (1990) recommend asking the students the following questions to prompt them in reflecting upon their work:

1. Describe the process you went through to complete this assignment.

2. What makes your most effective piece different from your least effective piece?
3. List the points made by the group review of your work. What did you do as the result of their feedback?

Student work produced over time and student self-reflection are the components that make up the portfolio task (e.g., selection of items and criteria). These tasks are usually set by the classroom teacher, although school systems and even states are developing task specifications for portfolios (Raizen, 1990). Typically, a teacher will ask students to include work of his/her own choosing. Student participation in the selection of the portfolios content is a critical component of the portfolio process (Meyer, 1990). The teacher may specify criteria for what kind of work this should include (e.g., written reports, tests, lab reports, project write-ups, and performance reports). Criteria are also developed for use in judging student performance. Teachers share the criteria and standards for performance with their students. This sharing enables students to evaluate themselves and recognize their own strengths and weaknesses. The teacher may also specify how often work must be included, e.g., once a week, once a month (Raizen, 1989). Components of the portfolio depend on the grade level, course, skill area, scope, and/or purpose for its use (Meyer, 1990). Content is based on purpose(s); pieces are included to demonstrate

progress toward a stated aim. Thus, one of the features that defines a portfolio and differentiates it from a folder or collection of work is the selection mechanism.

In addition, teachers may specify that students should comment on each of the inclusions in the portfolio as part of their own self-assessment. Evidence of student reflections about the portfolio's content is what makes a portfolio a portfolio and not just a folder. Usually the teacher specifies what kind of comments s/he wants in the portfolio. Here are some examples:

1. How well the student thinks s/he did on the inclusion and why.
2. What was hard and what was easy about the task.
3. What the student plans to do to remedy difficulties s/he had in the work.

The major attribute of portfolios is that they can be designed to function simultaneously as a teaching tool and as an assessment tool. Portfolios for the most part are used to inform the student of progress and to provide feedback on the teacher's instruction, without being graded, although scored assessment is being developed.

#### Approaches to Portfolio Assessment

Although educators are taking different approaches in the development of portfolio assessment models for classroom use, there are many commonalities in the four approaches



presented in this section. In each model discussed, the purpose and criteria are clearly defined as a first step and the focus is on student learning. The four models are Instruction and Assessment Model, Literacy-Based Portfolio Assessment, Assessment Design, and The Early Childhood Portfolio Collection Process.

#### Instruction and Assessment Model

Arter and Spandel (1992) developed this model for using portfolios of student work in instruction and assessment in collaboration with other researchers (Arter & Paulson, 1991; Collins, 1991; Macintosh, 1989; Murphy & Smith, 1990; Northwest Evaluation Association, 1989; Roettger & Szymczuk, 1990; Vavrus, 1990). The model was developed as new theories of learning, instruction, and assessment specified the importance of a close connection between assessment and the situations in which teaching and learning normally take place (Collins, Brown, & Newman, 1989; Wixson & Lipson, 1986). The process of "assembling portfolios of student work has the potential of both encouraging and documenting critical thinking, problem solving, and independent thinking" (Arter & Spandel, 1992, p. 37).

Portfolios are defined in Arter's model as a purposeful collection of student work that tells the story of the student's efforts, progress, or achievement in a given area(s). Portfolios include actual work samples and can be designed to

include drafts; therefore, not only can they contain samples of work that reflect real tasks, but they can be used to look at the processes students go through when doing these tasks. This collection must include student participation in selection of portfolio content, the guidelines for selection, the criteria for judging merit, and evidence of student self-reflection (Arter & Spandel, 1992). Their definition supports the view that assessment should be continuous, capture a rich array of what students know and can do, involve realistic contexts, communicate to students and others what is valued, portray the processes by which work is accomplished, and be integrated with instruction.

Arter identifies five key components in student portfolios. These components are purpose, student self-reflection, criteria, guidelines for selection, and student participation.

Components of students' portfolios. Purpose is a key essential in any student portfolio. Without purpose, a student portfolio is just a folder of student work. Different purposes could result in different portfolios. For example, if the student is to be evaluated on the basis of the work in the portfolio (i.e., for employment purposes), then s/he would probably choose the final version of his/her best work. If the portfolio is to be used to illustrate how students go about doing a project, a complete record of all activities, drafts, and revisions might be kept. Sometimes

the purpose for doing a portfolio is to celebrate what has been accomplished. This is a keepsake purpose and might include personal favorites. The purpose could also be for large-scale assessment which may require more standardized samples of work. Because of the many differences in content and approach, it is essential that users have a clear idea of the purpose of the portfolio.

Student self-reflection is another essential component because of the purposeful nature of the selection of work or other displays for the portfolio. To satisfy a purpose, there needs to be a rationale for the selection of the items to be included; this requires an analysis of the work and what it demonstrates. Recording this self-reflection in the form of a "metacognitive" letter or oral report not only documents this type of student performance, but also encourages it. Thus, self-reflection is one aspect that makes a portfolio instructional (Arter & Spandel, 1992).

Criteria for judging merit is the third essential component of student portfolios. Criteria provide a schema for thinking about student performance. The criteria must be clearly defined and discussed with students so they will know what is expected of them and when they have achieved success. It is this sharing of the criteria with students that makes them part of the evaluation and gives them the power to recognize strong performance, to identify problems in weak performance, and use criteria to change and improve. Thus,

criteria provide the means for teachers and students to judge performance.

Students need direction on what to place in their portfolios. Guidelines for selection can represent anything from specific items that must be included in every student's portfolio (structured) to students choosing whatever they want to put in their portfolio (unstructured). Sometimes teachers may specify categories of possible portfolio entries (i.e., everyone selects a research report, rough draft, best piece) with students free to select work for each category.

The true instructional value and power of doing portfolios comes when students use criteria and self-reflection to make decisions about what they want to show about themselves and why. This implies student participation in selection of portfolio content.

The portfolio definition presented above implies assessment. Students cannot assemble a portfolio without using clearly defined criteria in a systematic way to paint a picture of their own efforts, growth, and achievement. Portfolios used in this manner provide an example of how assessment can be used to improve achievement and not simply monitor achievement.

A useful way to think about a portfolio is as a storytelling device (Arter & Paulson, 1991; Paulson & Paulson, 1991). The purpose of the portfolio is to make sense of student work, to communicate about student work, and to make

sense of the work in the portfolio in terms of a larger context. The student work included in the portfolio is that which best tells the story one wants to tell. This requires justification and a rationale for the conclusions drawn, which again imply self-reflection, self-selection, and criteria.

Another type of portfolio is the composite portfolio. A composite portfolio is parallel to an individual student portfolio except that it tells the story for a group of students. This type of portfolio may be one way to aggregate information for demonstrating what impact a school or program is having on students in general, to demonstrate what is being taught.

According to Arter and Spandel (1992), when designing a portfolio model there are seven issues that should be addressed to avoid such problems as lack of representativeness of what takes place in the classroom, criteria that are vague or not clear, differences in interpretations, and extraneous response requirements.

Issues to address. Foremost is the issue of design responsibilities. Who should design the portfolio? Researchers in the area of portfolio assessment say that if the driving force behind the project comes from the students and teachers themselves, the portfolios may be seen as an innovative way to showcase, preserve, or celebrate what is

already taking place in the classroom. Thus, a grassroots effort not only has the potential to improve instruction, but also to produce the rich and valid sources of information needed for better large-scale assessment (Arter & Paulson, 1991; Collins, 1990; Roettger & Szymczuk, 1990; Vavrus, 1990).

Purpose is the second issue. What is the purpose of the portfolio? Who are the audiences? It is important that the purpose is defined clearly because it will affect the design and content. Good questions to prompt an answer in regard to the purpose of the portfolio are: Is it to show growth or change over time, to review curriculum or instruction, or to document achievement?

The link to instruction is the third issue. Students simply assembling a portfolio is a valuable instructional exercise in using criteria, taking audience into account, and self-reflection. The process of developing criteria is an instructional activity in and of itself because it forces articulation of what is valued. Third, since criteria are used for judging performance, teachers need to show where during instruction they taught students what they need to know to meet the criteria. For example, if teachers want students to self-reflect, they need to show students how to develop the skills that are needed for self-reflection to be done meaningfully.

Content is the fourth issue. Teachers will need to answer such questions as: What subject area(s) will be

covered by the portfolio? Will there be any guidelines for the types of items? When will work be chosen for inclusion? How will you check that tasks are realistic?

Assessment is the fifth issue. What criteria are used to assess individual portfolio entries and who develops them? Should there be criteria for assessing the portfolio as a whole? Who assesses? Teachers who determine the criteria in collaboration with students may use rating scales, checklists, ratings of other teachers, and/or student self-ratings.

Management and logistics is the sixth issue. Teachers need to ask themselves who selects the actual work that goes into the portfolio, how portfolios are stored and moved from teacher to teacher, who has access to portfolio content, and to whom does the portfolio belong?

Finally staff development is needed for teachers to explore the possibilities of portfolio development, to develop some notion of what portfolios can and should be. They need to be well-grounded in the development and use of performance criteria, so they can recognize strong performance in the specific subject area.

There is no one "right" way to design a portfolio system because it depends on context, purpose, and audience. In fact, it would be a mistake to adopt wholesale a portfolio system designed elsewhere because one of the most beneficial effects of designing a system is the bringing together of

staff to think through the issues of audience, purpose, content, and criteria (Arter & Spandel, 1992).

### Literacy-Based Portfolio Assessment

Busboom (1991) has proposed a literacy-based portfolio assessment model. The literacy-based portfolio is defined as a purposeful collection of student work and records of progress and achievement assembled over time (Tierney, Carter, & Desai, 1991; Valencia, 1990). It is a tool for expanding the quantity and quality of information used to examine literacy learning and to plan instruction.

According to Busboom (1991), this model includes four major areas: attitudinal awareness, process, product, and evaluation and feedback. Each of these areas will be discussed separately.

Attitudinal awareness. When developing a portfolio, teachers need to be aware of their students' attitudes toward school as well as their reading and writing habits. For example, reading inventories, surveys, questionnaires, self-awareness journals (Nist & Diehl, 1990), anecdotal records, observations, contracts, checklists, and study skills inventories (Weinstein, Palmer, & Schultz, 1987) can be developed to provide teachers with a profile of their students' literacy interests and needs.

Process. In addition to attitudinal awareness, teachers need to focus on their students' metacognitive awareness of



reading and writing. Teachers are beginning to establish process reading/writing classrooms in which students are given multiple opportunities to interact with print, to choose material they read, to collaborate and communicate with each other, and to engage with assessment of their own progress (Tierney et al., 1991).

For example, students can develop literature logs in which they record their readings and react to what they have read. They can tape their responses for discussion and evaluation, or they can videotape their reactions for peer critique. Anecdotal records can be kept for review and self-evaluation. Finally, a strategies journal can be developed that contains a student's written responses to study skills methods used to learn content area materials from textbooks (Busboom, 1991).

Products. Products are a relevant component of the portfolio. The product elements in a portfolio should be a plethora of activities and projects revealing both the students' strengths and those areas that need to be improved. Examples include work samples of rough and revised drafts, finished pieces, journals, anecdotal notes, checklists, and finished projects.

Evaluation and feedback. Feedback about the students' processes and products is essential for developing the portfolio as an integrative tool for instruction. Formal and informal assessment tools need to be incorporated into the

portfolio to provide information about the students' performance, clarify goals and objectives, document growth, and to establish future program changes (Busboom, 1991).

Graves (1990) advocates group sharing of evaluative techniques and the self-selection of individual pieces through labeling, in which students state their reactions to work samples. For example, students may indicate which pieces in their portfolio were the most difficult to complete and why particular pieces represent their best work.

A comparison portfolio is another evaluation process that compares and contrasts a student's beginning and ending performance in a specific subject area. This type of evaluation places students in the center of the evaluation process and encourages them to focus upon their own learning (Seidel, 1989).

This model has been introduced to elementary teachers and college professors in the field of communication. Studies reporting information pertaining to the outcomes of using this model were not found.

### Assessment Design

Stiggins (1987) developed a module to help teachers and administrators design a "blueprint" for a performance assessment system. The process is divided into four steps. Teachers and/or administrators must specify a reason for assessment, describe the performance to be evaluated, plan exercises, and outline rating procedures.

To ensure high quality in developing performance assessment, Stiggins lists five rules of test design:

1. be clear on the purpose of the assessment,
2. communicate effectively performance criteria conveyed in an understandable way to students prior to the assessment,
3. maximize the validity of the assessment by being sure about purpose, defining the student characteristics to be evaluated, specifying levels of performance along appropriate continuum, using exercises that sample the range of performance contexts, and comparing ratings with other achievement data when possible,
4. maximize the reliability of assessment by using clear criteria, training raters thoroughly, planning and implementing appropriate scoring procedures, and gathering enough samples of performance, and
5. attend to the economy of the assessment by adapting the form of the assessment to the purpose. (Stiggins, 1987, p. 39)

This model has been used by English teachers. Although personal testimonies can be found about the use of the model in the classroom, no formal data showing evaluation of the model has been conducted.

#### The Early Childhood Portfolio Collection Process

Currently, this model is being used in Michigan. It was developed by researchers at the Center for Human Growth and Development, University of Michigan.

The portfolio collection is ongoing, involving both teachers and children. In combination with other methods of documentation such as a developmental checklist, portfolios can transform assessment into an essential part of the

instructional program (Meisels & Steele, 1992). The process contains three steps:

1. Collection of children's work on a regular basis; items may include logs of books read, notes or comments by the teacher/child, etc.
2. Choosing items for entry in the portfolio. Young children cannot look at a stack of work and make informed choices for their portfolio, so teachers need to say for example, "Choose something that was most difficult for you to do."
3. Evaluation of the portfolio. Assessment is based on the child's continuous development toward a standard of performance that is consistent with the teacher's criteria for each child showing progress toward specified standards (Meisels & Steele, 1992).

No information was found pertaining to actual classroom use. This is probably due to the fact the model is current and evidence of use of the model in classroom settings has not been published.

#### Summary of Models

Research and development of portfolio assessment models is new on the educational scene. Many of the portfolio models that were described are in the beginning stages of implementation and provide limited information available pertaining to outcomes.

The first three models--Instruction and Assessment, Literacy-Based Assessment, and Assessment Design--contain similar components. Those components include purpose, criteria, and evaluation. Formal evaluation of these three models has not been conducted; however, development of the models has been thoroughly thought out by prominent educators (e.g., Arter & Spandel, 1992; Busboom, 1991; Stiggins, 1992; Northwest Evaluation Association, 1989). Each of the three models can be adapted to different subject areas. Although these models have chiefly been implemented in writing classrooms, the essential components of student portfolios in these models can be applied to other subject areas. The researcher of this study will use the Instruction and Assessment model in the designing of the student portfolio assessment model for vocational education courses.

#### Current Uses of Portfolios in Education

Many states have developed or are in the process of developing portfolio models to assess student learning in various subject areas. While the intent of the portfolio model may be different for each subject matter, the focus of each portfolio assessment process is to provide a broader picture of student learning.

#### Competency-Based Education Guide at Southwest Region School District

The main intent of the student portfolio at Southwest Region School district is to replace grade labels with

individual profiles of mastery. Presently, the school district has implemented its student portfolio in Grades 5 through 8 in both math and language arts subject areas.

The emphasis of the school district's competency-based education (CBE) program is on instruction, rather than evaluation. Student performance is evaluated using the following assessment devices: criterion referenced tests that measure individual items, student work samples, and demonstrations of concept applications as part of an assessment portfolio (Southwest Region School District, 1991-92).

Many of the CBE assessments do not use multiple-choice tests; instead, student work is used as a method of exhibiting mastery of a competency. Samples of writing, reading, math computations, or problem solving are used to show growth from the beginning of the school year to the end. Work samples can be chosen for inclusion by both the teacher and the student.

The student portfolio is used as a record-keeping and reporting system. The portfolio contains information from criterion-referenced tests and standardized exams. Anecdotal records and student work samples are also included in the portfolio.

Teachers develop the criteria to judge the work contained in the student portfolio. If the student's portfolio demonstrates mastery of the subject content, then the student

can proceed to more difficult tasks. However, if the student's portfolio does not demonstrate mastery, then intervention techniques and reteaching occur.

To review student portfolios, a minimum of two parent-teacher-administrator conferences are held per year. The goal is twofold: to communicate with parents and to better illustrate student growth to the parents.

During the conferences, some portfolio items are sent home with the parents. Samples most pertinent to show growth are collected early in the year and compared to those collected from mid-year and year-end samples. From one year to the next, the portfolio retains at least one sample which demonstrates the mastery of competencies.

#### Pilot Composite Health Portfolio, Grades K-12

The main purpose of this composite portfolio model was to show the Juneau, Alaska, school board that ample health instruction was taking place and that students were learning. Although the district has a required health curriculum, it did not have a required number of minutes per day that health should be taught. Several Board members had concerns about whether health was indeed being taught. A second purpose was to have the staff think about the extent and quality of instruction so that changes in curriculum delivery could be made if necessary (Arter & Calkins, 1991).

Judith Arter, who developed the instruction and assessment student portfolio model, and Annie Calkins of the Juneau School District developed the composite health portfolio. The composite portfolio model included the same items that are in the instruction and assessment model, except the composite portfolio model included groups of students' work instead of individual student work.

#### Assessment in Science

The purpose of the science assessment model is for close integration of assessment and learning in the classroom. This was such an important component of the model that assessment was to be indistinguishable from learning, and students were to continually monitor their own performance in ways that would help them improve their own learning. There were three ways assessments were to be used to achieve integration of assessment and learning: using test items that assess performance through extended written responses, using students' active performance in science activities, and helping students keep a portfolio containing self-evaluations of relevant work.

Swartz (1991), members of The NETWORK, Inc., and the National Center for Improving Science Education used current research on performance-based assessment for assessing learning in science. Emphasis was placed on the



development of processes through which students can construct meaning, processes students can use to validate their understandings, and strategies through which students can use their insights in constructive problem solving. (Swartz, 1991, p. 2)

### Arts PROPEL

Assessment is increasingly being linked to instruction. Assessment will not be separate from instruction; it will help a student and a teacher do better, rather than telling them how they did at the end of a course (Anrig, 1992). An example of assessment that has proved useful for instructional purposes now exists in the Pittsburgh Public Schools where educators are working with portfolio assessment. The teachers receive training about portfolio assessment and how to evaluate students' work. The idea is to give students immediate feedback, so that they can produce a new draft, get more feedback, and improve the work further. Participating teachers in Pittsburgh find the portfolio project useful and worth the time because it improves instruction.

Arts PROPEL is a three-way consortium bringing together the Pittsburgh Public Schools, Educational Testing Service, and Project Zero of the Harvard Graduate School of Education to collect and analyze student portfolios in creative writing, art, and music classes in the Pittsburgh City Schools. The program puts emphasis on perception and reflection of student work. Students and teachers spend 4 months in interaction and oral and written reflection before students begin to

create formal portfolios. At that point, usually in mid-January, the students select one piece of work and focus on it. They later move on to more varied forms and styles. The program builds on strengths and emphasizes successful experiences.

In 1992 the Pittsburgh schools had auditors come in and test the notion that portfolios can serve as accountability measures as well as teaching tools (Rothmon, 1992). Dennie Wolf (senior research associate at Harvard University's graduate school of education) said Pittsburgh's use of an audit system is a good first step to enable the district to use the new form of assessment as an accountability measure for achievement (Wolf, Bixby, & Gardner, 1991).

#### Vermont's Mathematics and Writing Portfolios

The math portfolio is a portfolio pilot project currently being conducted by the state of Vermont in Grades 4 through 8. Students and teachers assemble portfolios by selecting the pieces that represent their best efforts in math. Criteria for evaluating best piece entries include three general areas: task performance, communication, and student empowerment. Tasks are evaluated by criteria established by the teacher and the student. Students and teachers discuss the evaluation of their portfolios at weekly held conferences. During the conference, students reflect on their work and, with the teacher, provide input on their performance.

The writing portfolio also includes Grades 4 through 8 and was pilot tested in 1990. In 1992 Vermont became the first state to use portfolio assessment as part of its state-wide assessment system in writing (Rothman, 1992). The assessment system is in its infancy stage. Documentation of using portfolio assessment as a state assessment system has not been published.

### Literacy Portfolio

The Literacy Portfolio project began in Manchester, New Hampshire, with students in elementary to secondary school. Students' portfolios not only contain classroom items but items from beyond school. Students' most significant involvement with literacy may be outside of school (Heath, 1983; Hill, 1989). Our literacy is who we are (Neilson, 1989). Many of the students in inner city schools think, "I'm nobody." Later, with a self-created Literacy Portfolio in hand, they say, "This is me. I exist" (Hansen, 1992).

Literacy portfolios enable students to plan a relevant curriculum for themselves. As teachers learn what each student values, they look for ways to honor the student's concerns and interests within the school (Krogness, 1990). Maybe students will stay in a school in which they find authentic work.

According to the high school students, their portfolios have started to influence their writing and reading. One student wrote:

By making a portfolio, I found, even though my teachers often tell me this, that I am too much of a one-dimensional reader and that I should broaden my horizons to more than sports. I may have trouble doing so, but I am willing to try. (Hansen, 1992, p. 68)

### Laser Disk Portfolios

The laser disk portfolio assessment system is based on the work of IBM consultants and researchers from Project Zero at Harvard. Conestoga Elementary School in Wyoming received a grant to purchase the necessary computer hardware and software for the project.

A school planning team handled the implementation of the laser disk portfolio system. The guidance counselor made home visits to talk to parents about the system and ascertain any concerns or ideas about this means of assessment. Implementation began with one kindergarten class the first year to allow staff participants to acquaint themselves with the system and become comfortable with the equipment. Eventually, the school plans to implement the project in Grades K-6.

Large amounts of information can be added to or retrieved from the system as many times as necessary. Laser disks are small and can fit inside a student's permanent file, eliminating the need to find additional filing space. The system is the first of its kind in education that allows permanent storage of optical data, written and drawn images, and verbal ability (Campbell, 1992). Teachers can use the system as a diagnostic tool in their classes so they can determine which

students are struggling with schoolwork and which students are excelling.

California Vocational-Technical Student Assessment and Certification Project (VTSACP)

Under contract with the California Department of Education, Far West Laboratory is developing and field-testing a new system to assess and certify vocational education in California high schools, adult education, and Regional Occupational Centers/Programs. The project began in the spring of 1990 and was pilot tested during the 1991-92 school year in 210 vocational classes across the state.

Student portfolio assessment is a major part of the assessment system under development. The portfolios contain five components: a letter of introduction to the reader, a career development package (including a resume, a completed employment or college application, and a letter of recommendation), an evaluation by the supervisor of the student's practical or work experience, a written report, and work samples.

Portfolios in a Consumer Education Classroom

Melissa Moseler (1992), a home economics teacher in Wisconsin, began incorporating student portfolios in her family and consumer education classroom in 1992. She pursued the idea of using portfolio assessment to promote student self-growth, self-esteem, and self-worth. She has undertaken

the task on her own, and no district-wide initiatives for home economics teachers in Wisconsin have been planned for student portfolio assessment.

Each student in Moseler's consumer education class is required to keep two folders. One folder, called the working portfolio, contains all student work for a 3-week period. The second folder, the assessment portfolio, includes only their best work. Two informal assessments are made every 3 weeks, and a formal assessment is completed at the end of the quarter (Moseler, 1992).

#### Summary of States that Use Performance Assessment

The Center for Research on Evaluation, Standards, and Student Testing (CRESST) conducted a survey in the spring of 1990 of the 50 states to provide information about state interest, activity, and concerns related to performance assessment (Aschbacher, 1991). The information was collected during telephone interviews with the directors of student assessment programs in each state (Tables 1 and 2).

Tables 1 and 2 summarize performance activity and interest by grouping states according to their stage of involvement in innovative test practices. By the end of 1990, 23 of the states were involved with innovative performance assessment. They were divided among three stages: those that had some performance assessment in place for several years, those that are actively developing and piloting alternative

Table 1

Results of CRESST Survey: State Interest and Activity  
in Alternative Assessment, 1990

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States with Alternative Assessments in Place

CA	In place (math)--developing more math, science, social studies, writing
DE	In place (P.E., geography)--no other plans
HI	In place (math; alternative graduation exam in life skills)--exploring art, P.E.
ME	In place (reading, math)--interested in science
MA	In place (music, art, P.E.)--developing employability skills; have done science and career development in past--interested in social studies; tentative plans in science
NY	In place (science, math, social studies, second language, listening, speaking)
NC	In place (math)--interested in science, social studies, writing, speaking, second language, P.E.

States Currently Developing/Piloting Alternative Assessments

AK	Developing (portfolios in writing, interested in math)
AZ	Developing (reading, writing, math, social studies, science; subjects may be integrated; includes portfolios, pre-reading and pre-writing)
CT	Developing (math, science, writing, listening)
NJ	Developing (reading and math [open-ended])
VT	*Developing (math and writing portfolios; encouraging schools to include writing across curriculum in portfolios; planning science, history, citizenship)

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\*As of 1991 Vermont has in place writing portfolios.

Table 2

Results of CRESST Survey: 1991States Currently Exploring Possibilities (via committees or staff

AL Exploring (math)  
 CO Exploring (math, science)  
 IL Exploring (math)--exploring working with districts on science; interested in social studies  
 IN Exploring (science, math, social studies)  
 MD Exploring (creative integrative approaches to whole language may be with social studies, science, math)  
 MN Exploring/Developing (science, social studies, 3-day writing)  
 NM Exploring (reading, writing portfolios)--voluntary participation  
 OR Exploring (writing portfolios, math)--interested in P.E., science, social studies, art, music  
 KY Plans (curricular goals not set as of spring 1990)  
 TX Plans (interested in integrated writing and social studies)

States Not Currently Involved in Alternative Assessment

AR No plans (interested in writing portfolios)  
 FL \*No plans (interested in science portfolios)  
 GA No plans (interested in science)  
 IA \*No statewide testing  
 ID No plans (committee planning to consider possibilities)  
 KS No plans (working with districts on math portfolios)  
 LA No plans  
 MS No plans  
 MO No plans  
 MT No plans  
 NE No statewide testing (working with teachers on writing, math, and art portfolios)



Table 2 (continued)

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States Currently Exploring Possibilities (via committees or staff)

NV	No plans
NH	No plans
ND	No plans
OH	No plans
OK	No plans
PA	**No plans (interested in science)
RI	No plans
SC	No plans (considering calculators in math)
SD	No plans
TN	No plans
UT	No plans (interested in writing in content areas)
VA	No plans
WA	No plans
WV	No plans
WI	No plans (interested in science, language arts)
WY	No plans for statewide (districts will do in language arts)

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\*Iowa and Florida, on a school district level, are using portfolios in math and language arts.

\*\*As of 1991 Pittsburgh Schools are using portfolios in their Arts PROPEL program.

assessments, and those that are exploring possible performance assessment ideas with state assessment staff or are supporting districts that are trying to develop new local assessment methods.

The majority of the assessment activity or interest is in the areas of math (15 states) and science (15 states), followed by social studies (11 states), expanded direct writing such as portfolios (10 states), and language (4 states). A few states are involved with a performance approach to assessing other content areas such as reading, music, art, physical education, and employability skills. Three states are considering assessing writing and other skills in cooperative group settings (Aschbacher, 1991).

Despite interest among testing directors, half the states are not currently implementing or planning to implement statewide innovative performance assessment programs within the next several years (Aschbacher, 1991). Their reasons vary: some have little knowledge of performance assessment and feel it is not appropriate; some are waiting to see what will be feasible in other states before committing resources; some states do not have the funds to pursue interests; and others are awaiting official support for performance assessment.

The state testing directors underscored the need for research on technical and practical issues, such as validity,

bias, and impact on practice, as well as the need for greater collaboration, documentation, and sharing of successful efforts among researchers and practitioners across the country. Thus, the need exists to provide documented and shared information regarding research and development of portfolio assessment.

### Student Portfolio Assessment Model

In this chapter, the need for portfolio assessment in education, the definition of a student portfolio, and approaches to portfolio assessment were described. Portfolio approaches discussed in this chapter included Instruction and Assessment, Literacy-Based Assessment, Assessment Design, and The Early Childhood Model. The current uses of portfolios and a summary of states that use performance assessment were also discussed. The only use of portfolio assessment found in vocational education was use in consumer education by one teacher.

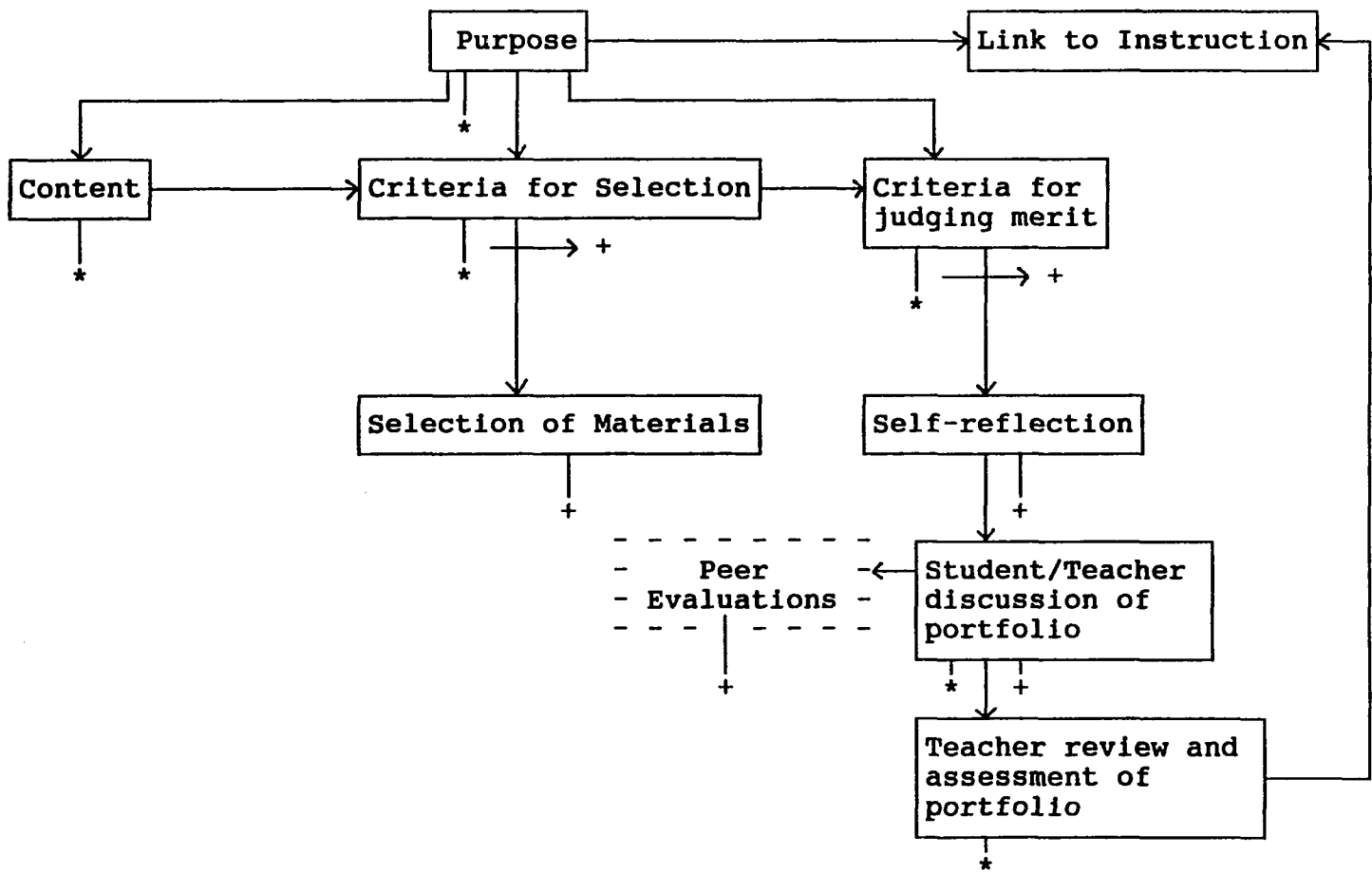
The portfolio assessment model used in this study was developed by Dr. Judy Arter and Vickie Spandel in collaboration with other researchers (Arter & Paulson, 1991; Collins, 1990; Macintosh, 1989; Murphey & Smith, 1990; Northwest Evaluation Association, 1989; Roettger & Szymczuk, 1990; Vavrus, 1990). This model was selected by the researcher because it was developed for using portfolios of student work in instruction and assessment. The researcher of this

study composed the graphical display of the model that connected the components to show the relationship between instruction and assessment. In addition, the main stakeholders in this model are depicted under each component to show who is responsible for each component, and the sharing of information with students. This model is teacher-directed and student-centered. The model shown in Figure 2 served as the basis for implementing portfolio assessment in this study.

The central component of the model is purpose (e.g., to show student growth or the processes by which work is done). Purpose affects content (e.g., subject areas to be selected) and the portfolio's link to instruction. Purpose also affects criteria for selection of items, criteria for judging merit, and student self-reflection about the items in their portfolio. This portfolio assessment model is teacher directed (i.e., identifying purpose, content, criteria for selection, judging merit, and teacher review) and student centered (i.e., criteria for judging merit, selection of material, self-reflection, and student/teacher discussion).

On the basis of the literature review, it was believed there were many positive outcomes for both students and teachers engaged in portfolio assessment. Teachers can document their students' learning processes and progress. Portfolio use can provide the teachers with an alternative assessment method that is student-centered. Instruction and

Figure 2. Student Portfolio Assessment Model



**Note.** \*=Teacher      +=Student  
 Arter, J. A., & Spandel, V. (1992). Using portfolios of student work in instruction and assessment. Educational Measurement: Issues and Practices, 10(1), 36-44.

assessment become linked and not separate from each other. It may be a method in addition to paper-pencil tests for teachers to use for assessing their students' higher-order thinking skills, problem-solving, and decision-making skills. In addition, teachers who use portfolio assessment in their classrooms may have fewer discipline problems than teachers who use traditional methods. Through portfolio assessment teachers have the opportunity for frequent communication with their students.

Through portfolio assessment, students have the opportunity to take ownership of their own learning and reflect on their work. Students become active learners and begin to articulate the concept that the process(es) used to complete a project and the product are inseparable. Portfolio assessment gives students opportunity to evaluate their own work and relate classroom activities to real life situations. Communication between students and teachers may be enhanced through student participation in selecting portfolio items and conferences among teachers, students, and sometimes parents.

Therefore, it was the purpose of this study to assist vocational education teachers in implementing the model developed by the researcher from Arter and Spandel's work (1992). Assessment of the model was based on the student and teacher outcomes previously described.

## CHAPTER III

## METHODOLOGY

This study was designed to develop, implement, and evaluate a student portfolio assessment model as a means of integrating assessment and instruction. In this chapter, selection of the sample, procedures, and staff development activities are discussed. In addition, the procedure for implementation of the model and follow-up activities are presented.

Subjects

Participants in this study were four secondary vocational teachers from business education and home economics courses. The population was identified using both the Greensboro Public Schools 1992-93 School Directory and a list of vocational teachers provided by the Greensboro Public School Vocational Department; the total number of vocational teachers in the areas previously mentioned is 31. An interest survey was sent to the teachers in November, 1992, to determine the number of teachers who would volunteer to participate in the study (see Appendix A). As an incentive, teachers who volunteer to participate in the 10-hour workshop and portfolio project received one unit certificate renewal credit and a \$50.00 stipend provided by

the Greensboro Public School Vocational Department from the staff development allotment.

Of the 15 vocational teachers who replied to the interest survey, 14 teachers attended the workshop session. Participants attending the workshop were secondary vocational teachers from business education, home economics, and special population courses. After the researcher read the oral presentation of the study, which was part of the human subjects review process, 5 of the 14 participants present agreed to participate in this study: 2 business education teachers and 3 home economics teachers. The other 9 participants who did not volunteer to participate in this study indicated that it would be too time consuming, and that they were not ready to change their way of thinking about assessment and instruction.

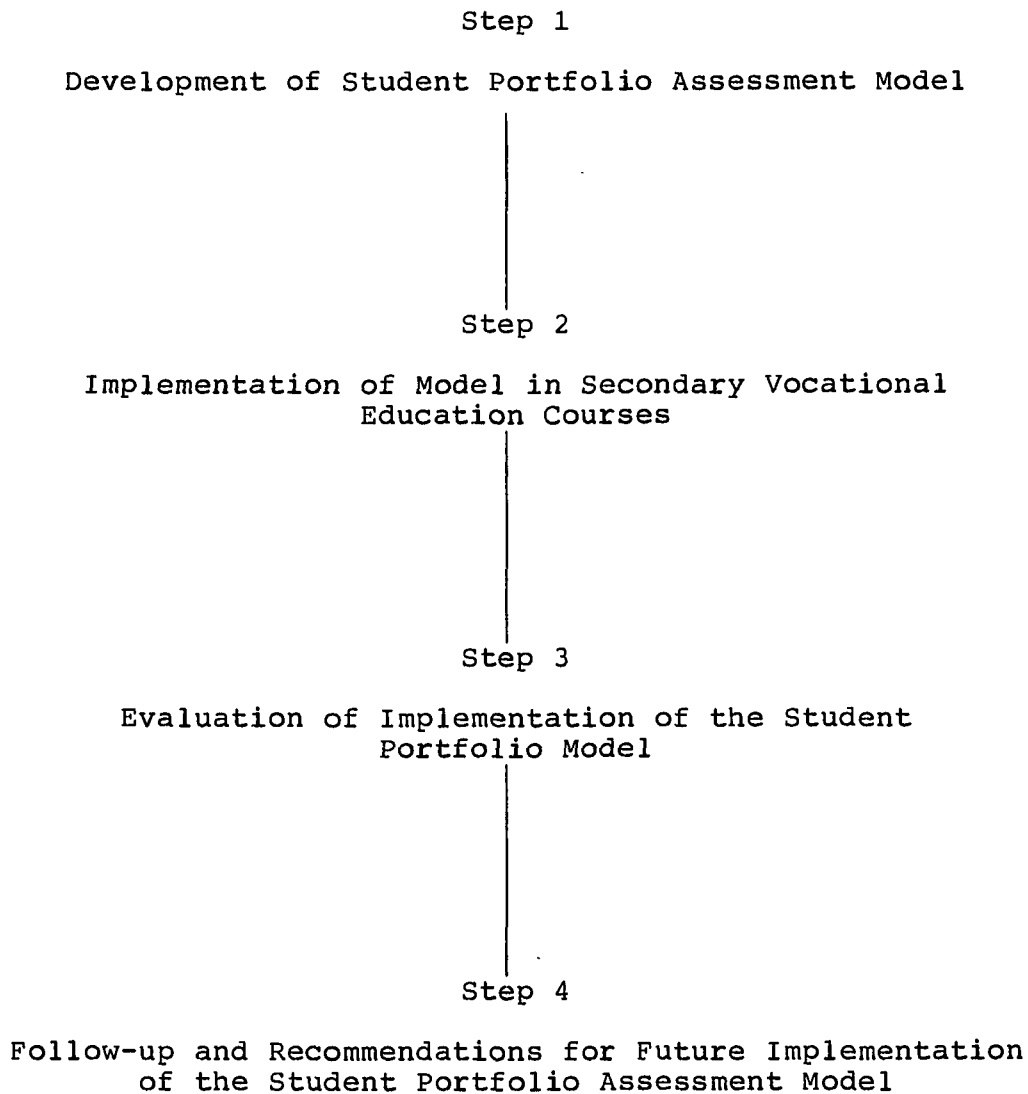
After 4 weeks of portfolio assessment implementation one of the five teachers dropped out of the study. She cited family needs which were taking away from the time she needed to spend on portfolio assessment. Thus, there were four teachers that participated in this study: two business education teachers and two home economics teachers.

#### Procedures

The design of the study consisted of four steps: (a) staff development, (b) implementation, (c) evaluation, and (d) follow-up as shown in Figure 3. Procedures,



Figure 3  
Design of the Study



instrumentation, and data collection will be discussed by each step.

### Staff Development

Staff development was selected as the vehicle for introduction of the student portfolio assessment model over a 10-hour period for 3 hours on Friday, January 15, 1993, and 7 hours on Saturday, January 16, 1993, at Weaver Education Center. The Assessment and Instruction model, developed by a consortium of researchers at Northwest Regional Educational Laboratory in 1991, was used to provide direction for adapting the student portfolio assessment model for use in secondary vocational education course(s). The model developed by the researcher was previously presented in Figure 2.

The objectives of the staff development activities for the participants in this study were to:

1. Describe the purpose(s) of student portfolio assessment.
2. Identify the components of the student portfolio assessment model.
3. Construct a plan for use of student portfolio assessment in business education, home economics, and special populations by:
  - a. identifying the purpose(s) of the student portfolio assessment model for use in vocational courses,

- b. identifying the criteria for judging merit of student work for vocational courses,
- c. identifying the criteria for selection of items to be placed in the student portfolio assessment model for vocational courses,
- d. constructing questions to prompt student self-reflection,
- e. developing methods of evaluating student portfolios in vocational courses,
- f. identifying portfolio assessment design issues (e.g., storage, transfer, ownership), and
- g. planning implementation procedures for use of student portfolio assessment in their classroom.

Prior to attending the first workshop, participants were asked to read the article supplied by the researcher entitled "Using Portfolios of Student Work in Instruction and Assessment" (Arter & Spandel, 1992). In addition, participants were instructed to bring samples of their students' work for use in the workshops.

Workshop. On the first day of the workshop, the workshop objectives and the student portfolio assessment model were presented to the group of participants. Participants then were divided into groups of three according to their vocational area: business education, home economics, and special populations.

Exercise One: The first activity was adapted from the Guide for Developing Student Portfolios (1991), by the Heartland Area Education Agency in Johnston, Iowa. During this activity, participants described in writing their concept of portfolios and their current concerns in relation to student assessment. Each participant then passed their concept paper to another participant for comments. The process continues until each participant received his/her original concept paper with written comments from each member of the group. The participants then compared their concepts of portfolio assessment.

Participants were asked to respond to the question, "What are your current concerns in relation to student assessment?" Participants' concepts of portfolios and responses to current concerns in student assessment were collected by the researcher and used as a stage one reflection of prior knowledge of portfolios and their concerns about student assessment.

Exercise Two: The job interview was the second activity. Participants were instructed to imagine that they are applying for another education related job. Instead of submitting a standard application form, the interview committee has asked applicants to submit a portfolio that paints a picture of who they were as vocational teachers at that time. Workshop participants worked independently of each

other and recorded their individual ideas. After ideas were recorded, the participants described the items they would include in their portfolios to the whole group.

After the job interview exercise, participants engaged in a reflection exercise pertaining to the items they selected to include in their portfolio. The researcher asked the participants to respond to questions that prompt self-reflection. For example:

1. What items were included in your portfolio?
2. What criteria might the committee use to judge your portfolio?
3. What would be your reaction to someone else assembling your job application portfolio for you?
4. What could happen if the committee planned a portfolio assessment without reflecting on how it was to be used?

Exercise Three: The reflection exercise preceded the presentation of the definition of portfolio assessment used in this study by the researcher. At this point the group began to discuss the components of the student portfolio assessment model on the basis of the article participants had read. The discussion that followed pertained to the components of the portfolio model which included purpose, student reflection, criteria for judging merit, guidelines for selection, and student participation in selection. Figure 2 was used

as a guide in developing the plan for use of portfolio assessment. The following questions were used during the discussion of the portfolio model. In addition, activities involving use of the components helped participants apply these areas of portfolio assessment to their course.

1. Who should design the portfolio assessment model?
2. What is the purpose of the portfolio assessment model?
3. What is the relationship between assessment, instruction, and portfolios?
4. How will you ensure that the portfolio designed in this workshop will mirror curricular goals that drive instruction?
5. What criteria will be used in evaluating the portfolio items and who develops them?
6. How will you prompt your students to self-reflect on their work in the portfolio? What kinds of questions will you ask your students?
7. What course(s) will be covered by the portfolio?
8. What will be the guidelines for the types of items included in the portfolio?
9. When will student work be chosen for inclusion?
10. How will you know that tasks students perform are authentic?
11. Should there be criteria for assessing the portfolio as a whole?

12. What is the difference between criteria and standards?
13. Who will select the work that goes into the portfolio?
14. How will the portfolios be stored and moved from teacher to teacher?
15. Who has access to portfolio content?
16. Who has ownership of the portfolio?

Following the discussion and application activities, participants met in groups of three and defined the student portfolio assessment model they planned to implement in selected courses. Participants reconvened in the large group and shared their ideas, comments, questions, and final thoughts. Finally, participants planned implementation of the model in their classrooms. They discussed as a large group their plans for introducing the concept to their students and when implementation would begin and end. Time for questions, comments, and review of the student portfolio assessment model concluded the workshop.

#### Implementation of Student Portfolio Assessment Model

The second step in the study involved implementation of the student portfolio model in secondary vocational education courses. At the end of the workshop five teachers volunteered to participate in this study. After 3 weeks, one teacher withdrew from the study citing family needs. The

four remaining participants implemented the student portfolio assessment model in four secondary vocational classrooms from January 25 until May 28, 1993; two were in home economics and two in business education.

After 4 weeks of portfolio assessment implementation, participants met with the researcher on February 22 at Weaver Education Center from 4:00 to 5:30 p.m. to share their experiences. This meeting served to share successes and to remedy problems encountered in implementing the model.

The researcher visited each participant four times during implementation of student portfolio assessment; the first visit took place during the latter part of February, the second visit in March, the third visit in April, and the final visit was in May to administer the student survey. During each visit the researcher gave participants the opportunity to ask questions and express concerns. The visits lasted approximately 45 minutes and were documented by field notes. In addition, the researcher offered to assist participants with portfolio assessment at any time throughout the duration of the study.

#### Evaluation of the Implementation of the Student Portfolio Model

Evaluation of the implementation of the student portfolio model in secondary vocational education was the third



step in this study. The evaluation plan addressed the use of implementing student portfolio assessment in vocational education in terms of teacher and student outcomes.

The following teacher outcomes were identified:

1. documentation of students' learning processes and progress,
2. an alternative assessment method that is student-centered,
3. assessment information linked to instruction,
4. assessment of higher order thinking skills, problem-solving, and decision-making skills,
5. few discipline problems,
6. frequent communication with their students,
7. a positive attitude toward portfolio assessment.

Student outcomes identified were:

1. ownership of their learning,
2. opportunity to reflect on their work,
3. recognition that processes used to complete a project and the product are inseparable,
4. evaluation of their own work,
5. active involvement in learning,
6. communication with their teachers about their learning,

7. classroom activities related to real life situations,
8. a positive attitude toward portfolio assessment.

Instrumentation. Measurement of participants' prior knowledge of portfolio assessment was obtained during the first day of the workshop. At the end of the 2-day workshop participants described in writing their concept of portfolios and were asked to describe their current concerns in relation to student assessment.

Questions for the instruments were based on the expected student and teacher outcomes identified in the literature review. There were 17 items on the student interview instrument pertaining to students' reactions about keeping a record of their work and what they liked about the portfolio experience. Teacher interview questions focused on implementation of the portfolio assessment model. There were 15 open-ended questions on the teacher interview. Each vocational teacher and three students from their classrooms were interviewed by the researcher in May. Instruments used in this study are located in Appendices A, B, and C.

The student survey was developed by the researcher to determine their reactions toward the portfolio assessment experience. There were 16 Likert scale items, 3 open-ended questions, and 1 question for additional comments. A Likert

scale with responses ranging from 1 to 5, 5 being strongly agree and 1 strongly disagree, was used to record responses for each question.

Pilot tests for student and teacher interviews were conducted in March with an English teacher and three of her students. The pilot tests were of limited use because the students were not using a portfolio model based on linking instruction with assessment. The English teacher stated that she used portfolios to improve students' writing skills. Therefore, no changes were made on either of the two instruments. A pilot test was administered in March to 15 students enrolled in English courses to refine the student survey and administration procedures. After analyzing the results of the pilot test, no changes were made on the student survey. It would have been helpful if pilot tests could have been conducted in classes where this model has been implemented, but no such classes were available.

The teacher log was developed by the researcher. There were 16 questions on the log that related to student and teacher reactions to implementation of portfolio assessment. The purpose of the log was to record information pertaining to portfolio model activities in their classrooms by three categories: implementation of model, students' reactions, and teacher reactions. Some items required a one-time response; other questions required repeated responses over

the length of the study. The researcher did not pilot test the teacher log.

Both teacher description and site description forms were composed by the researcher. These forms were used to gather descriptive information about the schools, classroom environment, and participants engaged in this study.

In addition, anecdotal records were kept by the researcher. These records served to document staff development activities, activities during the four visits, activities during the February and April meeting, and comments related to portfolio activities. Also, the Student Information Management System (SIMS) of the Greensboro Public School system provided demographic information about the students in this study.

Data collection procedures. The student interviews were conducted in May 1993 by the researcher. Three students from each teacher's class were selected by their teacher. The students represented three points of view: one who liked the portfolio experience, one who was neutral, and one who disliked the experience. The length of each student interview was approximately 30 minutes.

Teacher interviews were conducted by the researcher the last week in May, 1993. The interviews took place during the teachers' planning periods and lasted for approximately 40 minutes.

Vocational teachers were asked to keep a monthly log of classroom activities during the study. The teachers' monthly logs were collected by the researcher during the follow-up meeting on June 9, 1993.

Students enrolled in the four vocational classrooms completed the student survey on May 28, 1993. The survey was administered by the researcher during the first 15 minutes of class and was collected by the researcher.

Teacher and site descriptions were collected by the researcher during the February and March classroom visits. Other demographic information was obtained in January from each school's SIMS coordinator.

#### Data Analysis

The teachers' responses to the stage one and two reflections were summarized and used to document knowledge of portfolio assessment and their current concerns related to student assessment. Teacher and student interviews and teacher monthly logs were summarized with responses to the questions grouped by expected outcome. Content analysis of teacher and student responses was done by the researcher, and a crosswalk was developed by the researcher to facilitate this process by placing the items from the various instruments with the appropriate outcome. The crosswalk is located in Appendix D.

Student surveys were analyzed by descriptive statistics. Open-ended questions were summarized and related to the expected student outcomes.

Also, demographic information pertaining to teachers and students was analyzed by descriptive statistics. Information was summarized by gender, years of teaching, number of students in class, and other categories listed on the description forms and Student Information Management Systems report. Other data (e.g., workshop charts/notes, anecdotal records and follow-up activity notes) were summarized by the researcher and added to the appropriate expected outcome.

## CHAPTER IV

### FINDINGS

The purpose of this study was to introduce a student portfolio assessment model via staff development activities and to assist secondary vocational teachers in implementing the use of student portfolios in their classrooms. An analysis of anecdotal records from workshop activities and classroom observations, teacher logs, teacher and student interviews, and student surveys was conducted in relation to the objectives of this study. This chapter is divided into three sections: workshop activities, four cases of participants, and discussion.

#### Student Portfolio Assessment Workshop

The opening session for the 2-day workshop was held on January 15, 1993, from 4:00-7:00 p.m. Participants were divided into four groups according to their content area with one exception: the teacher from special populations joined a group of business education teachers. Participants were divided into four groups according to their content area with one exception: the teacher from special populations joined a group of business education teachers.

#### Activities

The researcher shared the objectives of the workshop with the vocational teachers to introduce them to what the

2-day workshop entailed. Each participant was given a notebook containing workshop activities and materials for later use. Activities designed by the researcher were to be used to explain the components of the student portfolio assessment model and to assist vocational teachers in developing their plan for implementation of the model.

Two activities were used to determine stage one reflections by the participants about portfolio assessment; stage one reflections represented participants' prior knowledge of portfolio assessment. First, participants were asked to respond to the question, "What are your current concerns in relation to student assessment?" Their responses included:

1. assessment of students' needs to be more flexible,
2. assessment of students' learning styles and aptitude,
3. assessment of students with reading disabilities,
4. the need for students to evaluate their work,
5. students not realizing the importance of doing their own work (n=2),
6. students not relating what they do in the classroom to the real world,
7. students placing more emphasis on the grade than their growth (n=2),
8. administration not setting reasonable expectations and goals (n=2),



9. present grading system sets some students up for failure, and
10. time to do assessment.

Participants were then asked to write their concept of portfolio assessment. Most of the participants had some knowledge of portfolio assessment from discussions with teachers, reading education journals, and reading the article supplied by the researcher. Their responses reflected prior knowledge of portfolio assessment, with a majority of participants saying that "portfolio assessment is a way to observe student progress."

A definition of portfolio assessment and components of the model were presented by the researcher. At this point, the participants began discussing each component of the model. Portfolio design questions were used to start the discussion. Participants agreed that "purpose" seemed to determine all other factors involved in planning for portfolio assessment. The researcher then used a transparency which identified components of the model, but did not specify whether decisions about the component were the responsibility of the teachers or students, or both. Participants' identification of the person(s) responsible for decisions made about the components of the model were similar to those described in the article the participants read prior to the workshop.

A variety of activities followed which related to each component of the student portfolio assessment model. The teachers' favorite activity was the job interview, which specified that the interview committee wanted a portfolio in addition to the job application. When the researcher asked the group if they wanted someone else putting together a portfolio for them, they all said "no." It was at this point two of the participants said, "I get it, students should select the work they want to go in their portfolio." This comment was a lead-in for the next activity during which they listed guidelines for including items in the portfolio. All agreed that it is the students who should decide which items to include in the portfolio (e.g., rough drafts, best works, and final products).

The workshop continued on January 16 from 8:30 a.m. to 4:30 p.m. Participants were eager to start developing a portfolio assessment plan for the specific course they selected. After viewing a video by the Association for Supervision and Curriculum Development (ASCD) entitled "Portfolios," they began developing their plans. Each plan developed by the participants was unique because the purposes for portfolio assessment were identified by the participants. For example, one participant decided the purpose for her computer education class would be to keep a career portfolio.

She also wanted to add peer counseling to the portfolio assessment model presented by the researcher. Another participant was a new teacher at her school, and she wanted the purpose to be to get to know her students. One teacher had as her purpose to keep a check on the competencies she was covering in class for the Vocational Competency Achievement Tracking System (VoCATS) at the end of the school year. Thus, the student portfolio assessment model was adapted for each participant's classroom needs and teaching style.

The most difficult component in the model for all participants to address was judging merit. The participants said they would like to ask their students if they wanted individual items or the whole portfolio graded. They also wanted to know what methods to use in assessing portfolio items. Many of the participants indicated "My students will not do anything in class unless it is for a grade"; thus, they were concerned about their students' motivation for developing portfolios. The purpose for portfolios selected by seven of the teachers was not intended to be graded, but they decided to grade some of the items in the portfolio so students would be motivated to complete assignments. Some of the participants added they would not indicate to students which pieces would be graded. The idea of not sharing this information with the students seemed to the researcher to be

inconsistent with the definition of portfolio assessment presented during the workshop. A discussion followed in which the researcher cited excerpts from the article used during the 2-day workshop. For example, one statement from the article reads, "The definition of portfolio assessment supports the view that assessment should communicate to students and others what is valued" (Arter & Spandel, 1992, p. 2). Although the participants agreed with the statement, some still did not indicate that they would share the information with the students.

That afternoon participants worked individually developing their portfolio plans. The researcher provided handouts to help them develop activities for students to use in self-reflection and student evaluation of their work. Handouts were also provided to help participants develop rating scales and scoring rubrics to use in grading their students' portfolio. The researcher discussed with the participants ways to introduce the concept of portfolio assessment to their students (e.g., sharing components of the model). Since no examples of student portfolios were found in vocational education, examples of student portfolios were primarily from writing classrooms. All of the participants used their subject area curriculum guides to match competencies and objectives with possible portfolio activities.

At 4:15 p.m., the participants had finished their plans and began sharing the information with members of their

groups. The researcher walked around the room and looked at the different portfolio assessment plans and asked the participants for questions or concerns they had about implementing their plan. All of the participants were interested in the topic, but some expressed concern about having time to do portfolio assessment. One participant put it best when she said, "It seems to me that portfolio assessment is very time consuming, and it would need to be time consuming to be successful."

The five who agreed to participate said they were excited about contributing to the development of a student portfolio assessment model for use in secondary education. One teacher further stated that this was the first time they were given the opportunity to begin a new project and have support personnel during the project.

#### Evaluation of Workshop

The researcher distributed the Greensboro Public Schools Staff Participant Evaluation form. The evaluation form has six items. The first item asks participants to check why they attended the workshop. Two Likert scale items follow; one asks participants to indicate the degree to which the topic and content presented were helpful, understandable, and satisfactory; and the other item asks how well the information was presented by the researcher (e.g., organization, useful activities, effective presentation style, encouraged

participation, and provided helpful handouts). There was another item for additional comments, one question pertaining to the use of the presenter of the workshop, and one question that asks participants to indicate what they plan to do differently as a result of the workshop. Responses used for the Likert scale were strongly agree, agree, disagree, and strongly disagree.

All participants agreed the topic was the reason they attended the workshop. Thirteen of the 14 participants strongly agreed that the topic and content presented were helpful, understandable, and satisfactory. Also, 10 of the 14 participants strongly agreed that the presenter of the workshop was well organized, provided useful information, used effective presentation style, encouraged participation, and provided helpful handouts. Six participants indicated they would recommend the use of the presenter again due to knowledge of the subject matter; five because information was useful for teachers and students; and three indicated they would recommend the use of the presenter because of her humorous and enthusiastic presentation style.

When asked, "What would you like to do differently on your job as a result of this workshop?" six participants indicated they would implement portfolio assessment in their classroom, four said they would add portfolio assessment to

their evaluation of students, and three indicated they would rely more on student self-assessment.

In addition, the researcher asked the participants, "What questions in terms of curriculum, instruction, and assessment has portfolio assessment answered for you?" Some of the participants indicated that portfolio assessment provided them with a means to double check what they had taught their students and if their students had applied that knowledge. Others thought it would help students see the grade they had worked for, and that portfolio assessment would be a means to assist students in assuming ownership of their own learning.

The 2-day student portfolio assessment workshop provided participants with resources and information they can use in their classrooms. Participants shared their current concerns about student assessment and their concept of portfolio assessment. Both activities represented participants' stage one reflections. All participants indicated this was a worthwhile topic and time well spent in learning and sharing classroom experiences together. They seemed to like having the opportunity to express their concerns about assessment and trying to find ways to meet the needs of their students.

Most of the participants followed the components of the model presented during the workshop in the development of

their plans. However, the flexibility of the portfolio assessment model was evident; one participant added peer counseling to her portfolio plan, and one participant decided not to communicate with her students which items in the portfolio would be graded. Both participants adapted the model to fit their classroom environment.

#### Implementation of Portfolio Assessment Model

The student portfolio assessment model was implemented in five vocational classrooms in three Greensboro Public High Schools on January 25, 1993. One of the five participants dropped out of the study during the first 3 weeks of implementation. She said that family needs had arisen and she could no longer devote her time to this study.

Each participant's implementation of her portfolio plan is presented as an individual case study in the section that follows. Each case study provides information pertaining to the teacher and site; implementation of participant's portfolio plan; 4th week implementation meeting; classroom visits by the researcher; and analysis of student and teacher interviews, the student survey, teacher logs, and field notes by both the teachers and the researcher. The four teachers who volunteered to participate in this study were assured confidentiality; therefore, each volunteer was assigned a fictitious name for the cases.



### Case One

#### Teacher and Site Description

Sudie has taught high school business education courses for 15 years. She holds a master's degree in business education and presently teaches computer application I and II, keyboarding, and principles of business. Prior to the workshop, her method of assessment was evaluation of student work completed, objective tests, essay tests, and production tests.

The total student population at Sudie's school was 1,535 with 607 or 39.5% of the students enrolled in vocational classes. The total number of students in her class was 21: 14 females and 7 males. Sudie has taught at this high school for 11 years, and she uses demonstration and practice sessions as her basic teaching strategy. The class meets every day in the computer lab and students work independently on problems assigned, with some group work activities. The course is designed to develop workplace competencies in business computer software packages. The number of units included in the second semester of the school year was three: Lotus 1-2-3, Desktop Publishing, and DBase.

#### Stage One and Two Reflections

During the workshop Sudie stated her current concerns with student achievement were the "present grading system that sets some students up for failure and lack of real-life situations used on conventional tests." Her stage one

reflections of portfolio assessment prior to the workshop was "a method of getting students to accumulate and organize their best work. They must know what is expected and what is good work." After the workshop her viewpoint of portfolio assessment changed. Sudie wrote:

Portfolio assessment is a method of getting students to take responsibility for their own learning through accumulating and organizing samples of their work and by evaluating their own work. Portfolio assessment also will serve to evaluate the curriculum and my teaching methods.

In Sudie's stage two reflections, she expanded her view of portfolio assessment to include students taking responsibility, students evaluating their own work, and teacher use of the information obtained to evaluate the curriculum and teaching methods. Her stage two reflections were consistent with the literature.

#### Sudie's Implementation Process

Sudie introduced portfolio assessment to her students by reviewing each component of the model. She shared with her students the purpose of the portfolio which was to document student achievement in computer application software. Each student had a list of items that had to be placed in their portfolio (criteria for selection). The students began with what Sudie called a "working portfolio." This meant that students included all their work in the portfolio,

e.g., rough drafts, notes. Sudie shared the criteria for judging merit with her students. She graded individual pieces of her students' portfolios but did not grade the portfolio as a whole. She provided the students with examples of what a grade of "A" looks like compared to "B" and so on.

Next she talked to her students about self-reflection and provided the students with questions to prompt their thinking about their work. Sudie provided her students with a schedule for student/teacher discussion of their portfolio. At the end of each unit she reviewed and assessed each student's "final portfolio." Students selected items from their "working" portfolio to include in the "final" portfolio for a grade. The final portfolio was unlike the working portfolio in that it represented the student's best work. It contained a table of contents that was a list of portfolio items Sudie had provided for her students. Student reflections on their best and most difficult piece were included. Evaluation of their work was documented by written comments made by the students about various projects (e.g., spreadsheets, fliers, and charts). Also, Sudie provided her students with written feedback on their portfolio items about how well they had done and how they could improve their work. Pieces in the final portfolio were graded by Sudie using the traditional grading scale (i.e., 93-100=A, 85-92=B).

The reaction of Sudie's students during the introductory period was positive. She said that her students were excited about being part of a study and interested in the concept of portfolio assessment. Some of the students indicated they had had some exposure to portfolio assessment in art and English classes.

#### Fourth Week Implementation Meeting

On February 18, 1993, the researcher met with the four vocational teachers to discuss successes, problems, plans to remedy problems, and other concerns. Sudie said her greatest success thus far was having students examine their work and writing essays describing what was good, what was not good, and what was difficult. She said, "Each time they did this I noticed a more positive approach to the next assignment." However, Sudie also identified writing as a problem for many of her students.

Some students who do not have writing skills have problems writing the reflective essays and complain about writing essays. They tell me this is a computer application class, not an English class. I think it's good that students have to write down their thoughts and think about what they have done in class.

To remedy this problem, Sudie decided to pair students with good writing skills with students having problems in writing. She later reported, "Some of the students with writing problems did improve on their evaluation essays. They liked having other students working them on their writing skills."

### Classroom Visits by the Researcher

The researcher visited Sudie's classroom on four occasions. On each visit the researcher spent 45 minutes informally observing classroom activities related to portfolio assessment. The first visit was during the last week in February, the second visit in March, the third in April, and the final visit was in May to administer the student survey.

During the first visit with Sudie, the researcher observed students sitting in groups of three working with computer application software. Sudie was seated behind her desk. During the 45-minute visit, the researcher observed the students talking with the teacher about items in their portfolio, and some students were talking to each other about self-reflections. The student portfolios were located in the center of the classroom for easy access. All students were involved with the assignment and openly communicating with their teacher.

The second and third visits took place in March and April. During both visits the researcher interacted with the students by asking them about their reactions to keeping a portfolio of their work. Comments from two of the students were "it was different" and "I can see how I'm doing in class." Another student who was working alone said, "My portfolio shows me the mistakes I have made and my teacher gives me the opportunity to correct the mistakes so I get graded on my best work."

On the third visit, one student said, "My portfolio helps me talk to my teacher, and it shows her the problems that I'm having and she can see that I am trying." By the third visit, the student portfolios were full of classroom assignments. Their portfolios were structured in that they included a table of contents, letter of introduction, list of items to include, student self-reflections about assignments, and students' evaluation of their portfolio. The students had not transferred their working portfolio into their final portfolio, and were discussing with each other which items represented their best work. They did not seem to have any problems with seeking advice from their peers. One student commented,

I always feel that I am competing with other students in class for the best grade, but in this class I compete with myself. I don't care what grade the other students get, I just care about my grade.

On this visit the researcher shared with Sudie the dates for the student interviews and survey, and scheduled the teacher interview in May. During the visits, discipline problems were not observed. Students were busy working alone or in groups on their portfolio. Communication between Sudie and her students seemed to increase with each visit, although Sudie indicated that she was not able to have student-teacher conferences as often as she had during the first part of the second semester. In April many school events interrupted

the normal school day (e.g., awards assemblies, senior day, planning for the prom, end-of-course test mandated by the North Carolina State Department of Public Instruction, and closing of school).

### Sudie's Perspective of Student Portfolio Assessment

The assessment of the use of student portfolios was focused on the outcomes identified in the literature. Therefore, data obtained from various sources will be presented in terms of teacher and student outcomes of this study.

Documentation of students' learning processes and progress. During the teacher interview Sudie stated:

My students were already keeping their work in notebooks and were writing reflective essays periodically for evaluations. They responded well to being allowed to choose only their best work or most significant work for the portfolios.

However, she also said:

Portfolio assessment has not had much effect on my knowledge of students' strengths and weaknesses, but I was impressed with the need to give my students more models of correctly formatted work. They need some criteria other than "It looks good to me."

Portfolio assessment was beneficial to her students in that

It helped them to see that they can and do produce good work. Sometimes when it is difficult to learn a new piece of software and the teacher is demanding, they feel they can't do anything right--or it is just not worth the effort. Many of them wrote on their final evaluations that it was hard at times but they were proud of what they had done.

An alternative assessment method that is student-centered. Sudie wrote in her teacher log, "The thing that worked in my classroom while using portfolio evaluation was having students examine their work and writing essays describing what was good, what was not good, what was difficult, etc." Her students seemed to like having input in selecting portfolio items. "Each time they did this I noticed a more positive approach to the next unit." She added, "Having students evaluate their final projects and write reflective essays was very effective for me. Many of them began to see that it was hard, but worth it." She added, "Students feel proud of what they have done, they feel empowered, and portfolio assessment could be used with courses like computer application."

Assessment information linked to instruction. During the teacher interview Sudie commented about how helpful the reflective feedback from students was in helping her to be a better facilitator. She indicated during the interview that portfolio assessment had affected her teaching because "I plan more carefully and use more evaluation checklists." Sudie also indicated in her teacher log that she learned through portfolio assessment that "Students evaluating their own work developed a more positive approach to the next unit of study" (i.e., Desktop Publishing and DBase).



Assessing higher order thinking skills, problem-solving, and decision-making skills. She stated during the teacher interview,

I am not sure at this point. That is something I will work on again next year. I did notice through their reflective summaries some of the thought processes they used to arrive at their conclusions, but I'm not sure at this point if portfolio assessment helped me to assess their critical thinking skills.

Few discipline problems. Sudie did not comment during the teacher interview on any relationship between discipline problems and the use of portfolio assessment in her classroom. The researcher did not observe discipline problems during the informal observations. Therefore, there was no evidence to support or not support this outcome in Sudie's class.

Communicating frequently with students. Informal observations by the researcher documented frequent communication between the students and Sudie. Also, Sudie indicated during the teacher interview, "Communication has probably improved with my students." However, by late May Sudie was not able to schedule student-teacher conferences as often as she had during the early part of the second semester. But she indicated in her teacher log, "We did not have scheduled conferences, but I did talk to students informally."

Positive attitude toward portfolio assessment. Sudie had a positive attitude as evidenced by her responses during

the teacher interview. She made comments about how portfolio assessment had helped her be a better facilitator, and that as a teacher she planned more carefully and used more evaluation checklists. The most important thing Sudie learned from portfolio assessment was, "Students need a showcase for their quality work. They like to point with pride and say 'I did that.' They like to feel that it was hard, but worth it." Sudie plans to use portfolio assessment in her classes next year. She said, "I think portfolio assessment in my class would have been more effective if we had started at the beginning of the year before classroom procedures and routines had been established."

#### Students' Perspectives of Portfolio Assessment

Data about student outcomes were collected from the teacher and student interviews, student surveys, and teacher log. Results are presented in relation to the eight student outcomes identified in the literature.

Students taking ownership of their learning. Of the 20 students responding to the survey in Sudie's class, 65% agreed that portfolio assessment was helping them depend on themselves (Table 3). Fifty-five percent of the students in Sudie's class believed portfolio assessment had caused them to figure out the answer to a question before asking the teacher for help, and 50% indicated that they had seen changes in themselves since using portfolio assessment.

Table 3

Sudie's Students' Responses on Survey

	<u>Agree</u>		<u>Uncertain</u>		<u>Disagree</u>		$\bar{X}$
	n	%	n	%	n	%	
1. I have learned how to judge my own work.	17	85	2	10	1	5	4.05
2. Portfolio assessment is not helping me depend on myself for what I learn.	3	15	4	20	13	65	2.40
3. I enjoy putting together a portfolio of my work.	13	65	1	5	6	30	3.45
4. I like paper-and-pencil tests better than portfolio assessment.	9	45	1	5	10	50	2.95
5. I am proud of my portfolio.	11	55	7	35	2	10	3.45
6. I feel more involved in what I am learning as a result of portfolio assessment.	12	63.1	3	15.8	4	21.1	3.52
7. Putting together a portfolio of my work is a waste of time.	6	30	3	15	11	55	2.50
8. I don't like talking about my portfolio work with classmates.	9	47.4	3	15.8	7	36.9	3.10
9. Portfolio assessment has helped me reflect about my work more than I did before.	13	65	4	20	3	15	3.65
10. Portfolio assessment has not increased my participation in class.	8	40	4	20	8	40	2.90

Table 3 (continued)

	<u>Agree</u>		<u>Uncertain</u>		<u>Disagree</u>		$\bar{X}$
	n	%	n	%	n	%	
11. Portfolio assessment has caused me to try to figure out the answer to a question before asking my teacher for help.	11	55	6	30	3	15	3.55
12. When my teacher gives me a project to do, I do my work without thinking about how I did it.	5	26.3	2	10.5	12	63.2	2.63
13. I feel comfortable talking to my teacher about my portfolio.	11	55	4	20	5	25	3.25
14. As a result of using portfolio assessment, I have made use of information taught in this class.	11	55	7	35	2	10	3.65
15. I do not see any changes that I have made in myself since using portfolio assessment.	9	45	1	5	10	50	3.05
16. This class seems more related to my life now that we are using portfolio assessment.	6	30	4	20	10	50	2.80

Note. A=strongly agree + agree, U=uncertain, D=disagree + strongly disagree.

Numerous responses to the question on the survey about what they learned about themselves during the portfolio experience related to this outcome. Four students said the more they evaluated their work, the harder they tried; and three students stated that they were more capable of doing good work. Also, three students indicated that they had learned how to figure out some of their own work. One student said that s/he liked doing hands-on activities, and another student indicated lack of organizational skills.

The three students selected from Sudie's class for interviews reflected different points of view about portfolio assessment. The student who liked the portfolio experience will be referred to with an "L"; the one who was neutral, an "N"; and the one who disliked the experience with a "D". Only one student indicated during the student interview that portfolio assessment had helped in assuming more ownership for learning. The student (L) said,

I will be majoring in Business Administration when I go to college and keeping a portfolio has helped me to figure out that I need to work real hard as a student. It makes me feel good to know that I have accomplished so much.

Another student (N) said, "I don't know how I think it's helped me, I mean I do what I'm told in class."

Student opportunity to reflect on their work. The students' responses to the student survey indicated that two-thirds of them thought that portfolio assessment had helped

them reflect about their work more than they had before. In response to the question on the survey, "What did you like about the portfolio experience?" three students' responses were related to this outcome. They indicated they liked the experience because it helped them review past work so mistakes could be seen and corrected. Student interviews revealed that reactions to self-reflection varied. The student (L) said,

I did summaries about my worst piece and best piece. At first, self-reflection was hard for me. The teacher gave us questions to help us self-reflect. After doing that for a while, I started thinking more about how I did certain things to finish a project or assignment.

However, the (N) student said, "I have trouble making decisions about how I can improve my work," and the (D) student stated,

It was difficult. You had to write summaries on what you had done a month ago. I thought it was a waste of time, because after I finish my work--that's it-- I don't want to think about it anymore.

Recognizing that the processes used to complete a project and the product are inseparable. Sixty-three percent of the students agreed with the statement on the student survey that they thought about how they did their work when the teacher gave them assignments. Comments from the student interviews indicated that the three students saw the relationship between process and product. In response to the question, "Are there pieces in your portfolio that are

mostly process, product, or both? Did you see the relationship between process and product?" the (L) student said, "Most pieces in my portfolio are process because you have steps you have to go through before you have a product. I feel that I learn more by process pieces than product pieces." The (N) student said, "Items in my portfolio are mostly process. You have to know the commands and follow each step before the assignment can be completed." The (D) student agreed with the other two students. "My portfolio is basically process, but I see the portfolio itself as a product."

Students evaluating their own work. The majority (85%) of Sudie's students agreed that portfolio assessment had taught them how to judge their own work. Six students responding to the question on the survey, "What did you like about the portfolio experience?" indicated they liked judging their own work. During the student interviews, comments reflected evaluation of their own work in that there were pieces in their portfolio about which they had changed their minds. The (L) student changed her mind about a memo design. She recognized that the picture was not centered correctly so she went back and changed it. The (N) student changed his mind about a Lotus spreadsheet he had done earlier. He said, "my margins were off and I had to get a better grade. When I did the spreadsheet over and compared it to the first one that I did, I liked it a lot better; I finally got the

margins right." The (D) student said, "Yea, there were some I messed up on, my flier. I did the flier over and now it looks good. It's the only thing I did over in this class."

When asked during the student interview, "If you had to select one piece from your portfolio as your best piece, what would it be and why?" comments from all three students indicated evaluation of their work in the process of selecting their best piece. The (L) student said, "My best piece was the graph I did about sales performance for June. I had to put in a legend, date, and xy axis. I did the graph four times before I got it right." The (N) student stated, "The newsletter that I did. It took a long time to do, I had to know how to set the page and use different fonts." The (D) student said, "The flier I did. I had to use different fonts and layouts, and skills I had learned to put it together."

Students being actively involved in learning. On the student survey, approximately 63% of Sudie's students agreed that they felt more involved in what they were learning as a result of portfolio assessment. In response to another item, although 40% of the students agreed that portfolio assessment had not increased their participation in class, 30% indicated that it had. In response to the question on the survey about what they had learned about themselves during the portfolio experience, five students indicated that the more they viewed their work, the more they tried to improve and strive to do their best. Seven students said they



could perform different tasks in putting their projects together. Students stated during the interviews that they worked harder in class, but none of them reported increased participation in class. In response to another aspect of involvement in learning, 47% of the students agreed they did not like talking about their portfolio to other classmates; however, 37% of the students disagreed with the statement.

Communicating frequently with their teachers about their learning. Approximately 55% of the students indicated on the student survey that they felt comfortable talking about their portfolio with their teacher, 20% were undecided, and 25% disagreed with the statement. The student interviews indicated that the students now had more to talk about with their teacher. When asked, "How comfortable did you feel discussing your work with your teacher?" the (L) student said, "I've always been comfortable discussing my work with my teacher." The (N) student had no comment to make, and the (D) student said, "It was okay."

Students relating classroom activities to real life situations. Fifty-five percent of Sudie's students indicated on the student survey that as a result of using portfolio assessment, they had made use of information taught in their class. Also, 50% of the students had seen changes in themselves as a result of using portfolios. Thirty percent of the students agreed that their class had made a difference

in their life as a result of using portfolio assessment. However, 50% of the students did not feel their class was more related to their life after using portfolio assessment.

A positive attitude toward portfolio assessment. The students indicated on the survey that they were proud of their portfolio, with 65% agreeing with the statement. In response to the statement "I like paper-and-pencil tests better than portfolio assessment," 50% of the students disagreed with the statement. Approximately half (55%) of the students disagreed with the statement "Putting together a portfolio of my work is a waste of time." In response to the question on the survey, "What did you like about the portfolio experience?" the students indicated they liked the experience because it showed them how much they had learned in class, and how they had improved from the beginning of the semester. In addition, during the student interviews, the (L) student said, "I like to get things done quick, but I like to do it until I get it right. Paper and pencil tests don't measure process." On the other hand, the (D) student stated, "Paper and pencil tests are easier for me because it's a one-time deal; portfolios are every day."

### Summary

Sudie introduced portfolio assessment to her students by reviewing each component of the portfolio assessment model presented during the workshop. The purpose of her portfolio

plan was to document student achievement. She did not change any aspect of her portfolio plan during implementation.

The most successful part of this experience for Sudie was students evaluating their own work. She learned through using portfolio assessment that her students needed a showcase for their work. Also, she learned that portfolio assessment provided the venue for her students to see that they are capable of producing quality work.

The portfolio assessment model presented during the workshop provided Sudie with a means to link instruction with assessment. The teacher outcome that had the most impact on Sudie's experience was assessment linked to instruction. She said that use of portfolio assessment had affected her teaching by enabling her to plan classroom activities more carefully and provide more evaluation checklists for assessing students' work. She further indicated that her students' reflective essays had helped her in becoming a better facilitator. Thus, portfolio assessment seemed to address the concerns Sudie had about assessment during her stage one reflection which were the present grading system that sets some students up for failure and lack of real-life situations used on conventional tests.

Through use of portfolio assessment, students in Sudie's class learned how to evaluate their own work. The item with the highest mean ( $\bar{X}=4.05$ ) on the student survey pertained to judging their own work. Students also indicated on the

survey that the more they evaluate their work, the harder they strive to do their best.

Students having the opportunity to reflect on their work was the outcome with the second highest mean (e.65). Students indicated that portfolio assessment had helped them reflect more on their work than they did before. Their portfolios contained evidence of students' self-reflection by written comments the students made about their work. In addition, use of portfolios helped students to relate classroom activities to real-life situations. They indicated on the survey that as a result of portfolio assessment they had made use of information taught in their class ( $\bar{X}=3.65$ ). However, their class did not seem more related to their lives as a result of using portfolio assessment. This item had the lowest student mean ( $\bar{X}=2.80$ ).

Portfolio assessment also enabled students to take more responsibility for what they are learning (i.e., ownership of learning). Students indicated on the survey that they tried to find the answer to a problem prior to asking their teacher for help ( $\bar{X}=3.55$ ). In response to another item on the survey, students said they tried to figure out how to do some of their work on their own. Finally, as a result of using portfolio assessment the students became actively involved in their learning. They indicated on the survey that they were more involved in what they were learning as a result of portfolio assessment ( $\bar{X}=3.52$ ).

## Case Two

### Teacher and Site Description

Sue has taught high school home economics courses for 12 years. She holds a bachelor's degree in home economics and presently teaches a clothing class for beginners, child development, Teen Living, and foods and nutrition. Prior to the workshop, her method of assessment was paper-and-pencil tests and classroom projects.

The total student population at Sue's school was 1,366, with 819 or 59.9% of the students enrolled in vocational classes. The total number of students in her class was 16 females. Sue has taught at this high school for 7 years, and she uses individualized instruction as her basic teaching strategy. The class meets every day in the home economics sewing lab, and students work independently on sewing projects. Sue encourages her students to assist each other with sewing projects, and they receive credit for doing this. The course is designed to teach sewing skills to beginners and students who have done some sewing. The number of units included in the second semester of the school year was two.

### Stage One and Two Reflections

During the workshop, Sue stated her current concern with student achievement was that "all students need to be assessed by the 9th grade; learning styles and aptitude need to be assessed." Her stage one reflection of portfolio

assessment prior to the workshop was "the collection of student work that shows examples of competencies achieved, special projects attempted and self-critique and ideas for improving next time." After the workshop, Sue expanded her thinking of portfolio assessment. She wrote:

Portfolio assessment is another way for the teacher and the student to show progress in achieving certain goals in a class over time. It increases self-evaluation and communication skills and gives concrete evidence of student abilities and areas needed for improvement. It can be a life skill to continue after graduation. It is a useful process for updating a teacher's curriculum.

In Sue's stage two reflections, she included both students and teachers, and the updating of the teacher's curriculum. Her stage two reflections were consistent with the literature.

#### Sue's Implementation Process

Sue introduced portfolio assessment to her students by sharing the benefits of using portfolio assessment. She said that portfolios give students pride and ownership in their learning process, not just their grade. She shared with her students the purpose of the portfolio which was to reflect how much they had learned and how far they had come in learning a skill over a semester. Her students' portfolios included all their work (e.g., miniature sewing projects, sewing samples, tests, and student reflections). Sue

provided her students with a list of questions to prompt their self-reflection. She did not grade her students' portfolios.

She had daily student/teacher discussion of the portfolios. At the end of each unit she reviewed each student's portfolio and assessed individual items in the students' portfolios. The students' portfolios contained a weekly calendar prepared by Sue with a list of items to be included in their portfolio. There was evidence of both student self-reflection and evaluation of their work by written student comments. Students also included pictures of their completed sewing projects in their portfolio. Sue provided her students with written feedback about what they needed to improve on and what they had been most successful at doing.

The reactions of Sue's students during the introductory period were positive. They were curious about the concept of portfolio assessment because they had not been exposed to it in other classes.

#### Fourth Week Implementation Meeting

Sue said her greatest success thus far was "spending time with my students while 'we' do 'evaluation.'" However, Sue also indicated that she did not have the time to evaluate her students' work as closely as she would like. She did not have a plan to remedy the problem, but she did say,

"I'm working on it--scratch pad status at this time." A concern she voiced during the meeting was permission to show the students' portfolios to others without violating her students' privacy. Sue said that her "students may feel inhibited about writing personal reflections if items in their portfolios were available to teachers and administrators." The researcher and the four teachers discussed the concern because it had implications for the way in which information for the portfolio was gathered and used, and also what her students were willing to include. She thought the potential of the portfolio to reflect her students' capabilities fully would be compromised and the other three teachers agreed. Sue decided not to share the information with others without first obtaining the permission of her students.

Students' portfolios in Sue's class included all their work. Sue provided students with a calendar that listed the items to include in their portfolio on a weekly basis. Because students included all their work in their portfolio, storage of the portfolios became a problem for Sue. Another problem Sue mentioned was students taking other students' work from their portfolio and presenting the work as their own. She indicated that next year she plans to keep the portfolios in a more secure place.



### Classroom Visits by the Researcher

The researcher visited Sue's classroom on four occasions. Each visit lasted approximately 45 minutes. On the first visit with Sue, the researcher observed students working individually on sewing projects. The researcher talked to four of Sue's students about portfolio assessment. One said she liked portfolios because they show the mistakes made and they have the opportunity to correct their mistakes. Another student indicated that it showed what they had accomplished in class. The third student said, "It helps me talk to my teacher." The fourth student thought portfolio assessment was fun.

The second and third visits took place in March and April. Students were observed discussing their portfolios with each other. Sue was administering a performance test the following day, and the students were using their portfolios to review how to make buttonholes and insert zippers. She had shared with her students the chart that she would use to evaluate their sewing project. Their portfolios were unstructured in that they did not contain a table of contents, letter of introduction, and a list of items to include. However, there was evidence of student reflections about assignments and students' evaluation of their portfolio.

During this visit, the researcher shared with Sue the dates for the student interviews and survey and scheduled

the teacher interview in May. Discipline problems were not observed during the visits. Sue indicated that her student portfolios were full and it was beginning to be a storage problem. Students seemed comfortable discussing their portfolios with their teacher and fellow students. Sue had daily discussions with her students about items in their portfolio.

#### Sue's Perspective of Student Portfolio Assessment

Documentation of students' learning processes and progress. During the teacher interview Sue stated:

Portfolio assessment helped my students to see how to do sewing techniques they had actually used in a project. The portfolio gave them a chance to do an assignment over until they had what they considered an adequate sample. Some students were much more motivated than others by getting a grade on portfolio material.

Sue learned by using portfolios that her slow learners decorated the outside of their portfolios and the few academically gifted students did not. She also stated, "The slow learners in my class did a better job of including their work in it than the gifted students." She said:

I guess the most important thing I learned about my students was, given the opportunity, most students will be motivated to continue doing an assignment until they get it right. They learn best from their mistakes.

Portfolio assessment was beneficial to Sue because it made her look at what she was teaching, how she was presenting

material, and what she expected of her students. Sue said, "I believe my expectations for my teaching and their learning increased. The portfolio is limited, but it is also pictorial and concrete. I can see if they have achieved a skill." It was also beneficial to her students because she said,

It has helped them to be more organized in class, it has shown them what they did in the past, which makes them study harder. If the students don't understand a sewing technique, they can go back and look it up in their portfolios.

In her teacher log, Sue indicated that she learned by using portfolios how valuable they were for showing student growth. But she also wrote that sometimes students were satisfied with too little, and sometimes they evaluated themselves more critically than she did.

An alternative assessment method that is student-centered. Sue said during the teacher interview, "I think my students have shown me what they can do by keeping a portfolio as opposed to filling in the blanks or circling the correct response on a test." In her teacher log, Sue also indicated that use of portfolios provided a better means of assessing performance skills taught in class than paper-and-pencil tests.

Assessment information linked to instruction. During the interview Sue stated:

Portfolio assessment has helped me organize the competencies I need to teach and to reflect on what is really necessary to test. If I am not certain I have taught certain competencies, I look through my students' portfolios to see which ones I need to teach.

She added, "I have noticed that I emphasize some competencies more than others. But I try to make sure I cover the competencies that are addressed on VoCATS."

Assessing students' higher-order thinking skills, problem-solving, and decision-making skills. Sue did not use the portfolios to assess higher-order thinking skills. She stated during the teacher interview, "This is one I need to work on more. I know students in my class seemed to think more about what they were doing, but I didn't measure students' higher-order thinking skills."

Few discipline problems. Sue did not comment during the teacher interview on any relationship between discipline problems and use of portfolio assessment in her classroom. The researcher did not observe discipline problems during the informal observations. Therefore, evidence to support or not support this outcome was not documented in Sue's classroom.

Communicating frequently with students. Sue indicated during the teacher interview that portfolio assessment "increased one-on-one communication with my students." Informal observations by the researcher also documented frequent communication between the students and Sue. In the teacher log, Sue wrote that she had daily student/teacher

conferences with her students to discuss portfolio items. She added, "Portfolios have increased communication with individual students and have provided a visual picture of what they have accomplished and what they need to accomplish."

A positive attitude toward portfolio assessment. Sue had a positive attitude toward portfolio assessment as evidenced by her responses during the teacher interview. She made comments about how portfolio assessment had helped her organize what was important to teach and whether she was teaching the competencies the students would need to study for the end-of-course test. Sue said,

When I do this again I want to tie the portfolio more closely to the competencies for each class and let each student have more freedom to choose ways to show they successfully mastered that competency.

#### Students' Perspective of Portfolio Assessment

Students taking ownership of their learning. Of the 16 students enrolled in Sue's class, 10 students responded to the survey. Fifty percent agreed that portfolio assessment was helping them depend on themselves (Table 4). Seventy percent of the students in Sue's class believed it had caused them to figure out the answer to a question before asking the teacher for help, and 80% indicated that they had seen changes in themselves since using portfolio assessment. Responses on the student survey related to what they learned about themselves during the portfolio experience which

Table 4

Sue's Students' Responses on Survey

	<u>Agree</u>		<u>Uncertain</u>		<u>Disagree</u>		$\bar{X}$
	n	%	n	%	n	%	
1. I have learned how to judge my own work.	9	90	1	10			4.40
2. Portfolio assessment is not helping me depend on myself for what I learn.	2	20	3	30	5	50	2.40
3. I enjoy putting together a portfolio of my work.	9	90	1	10			4.40
4. I like paper-and-pencil tests better than portfolio assessment.	2	20	6	60	2	20	2.90
5. I am proud of my portfolio.	8	80	1	10	1	10	4.40
6. I feel more involved in what I am learning as a result of portfolio assessment.	8	80	2	20			3.90
7. Putting together a portfolio of my work is a waste of time.			2	20	8	80	2.10
8. I don't like talking about my portfolio work with classmates.	2	20	2	20	6	60	2.60
9. Portfolio assessment has helped me reflect about my work more than I did before.	8	80	1	10	1	10	3.80
10. Portfolio assessment has not increased my participation in class.	1	10	5	50	4	40	2.50

Table 4 (continued)

	<u>Agree</u>		<u>Uncertain</u>		<u>Disagree</u>		$\bar{X}$
	n	%	n	%	n	%	
11. Portfolio assessment has caused me to try to figure out the answer to a question before asking my teacher for help.	7	70	1	10	2	20	3.60
12. When my teacher gives me a project to do, I do my work without thinking about how I did it.	2	20	2	20	6	60	2.40
13. I feel comfortable talking to my teacher about my portfolio.	7	70			3	30	3.80
14. As a result of using portfolio assessment, I have made use of information taught in this class.	9	90	1	10			4.00
15. I do not see any changes that I have made in myself since using portfolio assessment.	1	10	1	10	8	80	2.20
16. This class seems more related to my life now that we are using portfolio assessment.	2	20	5	50	3	30	3.10

Note. A=strongly agree + agree, U=uncertain, D=disagree + strongly disagree.

related to this outcome varied. Four students commented that they were doing better work, and three students said that looking at examples of their work in their portfolio helped them to study for tests. Another student indicated that she had learned how to evaluate her own work through portfolio assessment. Two of the three students interviewed indicated that portfolio assessment had helped them take ownership of their learning. The (L) student said, "It helped me to learn well and I can remember it in my mind by looking back at my portfolio. I can study my work and it prepares me for tests." The (N) student said, "I'd like to keep my portfolio because if I keep it, I'll have my information about sewing so I can understand how to sew." However, the (D) student stated, "It hasn't helped me as a student, because I don't use it."

Student opportunity to reflect on their work. The students' responses to the student survey indicated that 80% of them thought that portfolio assessment has helped them reflect about their work more than they had before. Student interviews revealed that two students' reactions to self-reflection were negative. The (N) student stated, "It was hard for me because it's hard to put words on paper--writing is hard for me." The (D) student echoed a similar response, "It was difficult for me because I don't know what's wrong or right with my work. I need someone to tell me." However,



the (L) student said, "I thought it was easy. I'm always thinking about what I'm doing in school. I like to get my work right."

Recognizing that the processes used to complete a project and the product are inseparable. Most students in Sue's class were able to recognize that the processes used to complete a project and the product are inseparable. Sixty percent of the students agreed with the statement on the student survey that they thought about how they did their work when the teacher gave them assignments.

Comments from the student interview indicated that two of the three students understood the relationship between process and product. The students were asked whether pieces in their portfolio were mostly process, product, or both, and if they saw the relationship between process and product. The (L) student said, "My portfolio has both, because both show me how to sew my garments." The (N) student indicated that she did not know. "Maybe it's product, but I really don't see a relationship between the two." The negative student stated, "I have both process and product. There is a relationship between the two. I have to know how to cut out my pattern before I can sew my shorts."

Students evaluating their own work. Approximately 90% of Sue's students agreed that portfolio assessment had taught them how to judge their own work. Additional information

about evaluating their own work came from the student interviews. Two of the three students indicated that there were pieces in their portfolio about which they had changed their mind; comments suggested this was a result of self-assessment. The (L) student said, "The dart I did was not a good one. When I first did the dart, I thought it looked okay, but the seam came apart because I didn't backstitch--so I did it over." Although the (D) student changed her mind about one of the items in her portfolio, she did not do the item over. She stated, "Yes, I changed my mind about the gathers." The (N) student indicated that she had not changed her mind about any of her portfolio items.

When asked during the student interview, "If you had to select one piece from your portfolio as your best piece, what would it be and why?" comments from two of the three students indicated evaluation of their work in the process of selecting their best piece. The (L) student said, "The pocket seams I sewed on my shorts; the seams are straight and it was the first time I have ever made anything." The (N) student stated, "The gathers and casing piece I did, because when I look at it, I will know how to make another skirt." But the (D) student said, "I really don't have a piece I like best, because I didn't do much."

Students being actively involved in learning. On the student survey, approximately 80% of Sue's students agreed

that they were more involved in what they were learning as a result of portfolio assessment. In response to another item, 10% of the students agreed that portfolio assessment had not increased their participation in class, and 40% indicated that it had. In addition, 60% of the students agreed that they liked talking about their portfolio with classmates. Indication of increased participation in class due to use of portfolios was not mentioned by the three students during the student interviews.

Communicating frequently with their teacher about their learning. Approximately 70% of the students indicated on the student survey that they were comfortable talking about their portfolio with their teacher, and 30% disagreed with the statement. Sue indicated during the teacher interview that one-on-one communication with her students had increased since using portfolios. However, during the student interviews, the (L) student stated she was comfortable talking to her teacher, but the (N) and (D) students indicated they did not like discussing their portfolio with Sue. The (L) student said, "That was nice, my teacher made me feel better about myself. I gained confidence in myself and I learned that I was a better student than I thought." The (N) student said, "I didn't like discussing it with her because I didn't do all my work and she would ask me why and I wasn't doing all my work." The (D) student stated, "I didn't feel comfortable talking to my teacher, because I don't like her."

Students relating classroom activities to real life situations. Ninety percent of Sue's students indicated on the student survey that as a result of using portfolio assessment, they had made use of information taught in their class. Also, 80% of the students had seen changes in themselves as a result of using portfolios. Although 20% of the students indicated that their class was more related to their life after using portfolio assessment, 50% of the students were undecided, and 30% disagreed with the statement.

A positive attitude toward portfolio assessment. The majority of the students (80%) indicated on the survey that they were proud of their portfolio. Students were undecided about whether or not they liked paper-and-pencil tests better than portfolio assessment; 60% were undecided and 20% liked portfolios better than paper-and-pencil tests. Over three-fourths (80%) of the students disagreed with the statement "Putting together a portfolio of my work is a waste of time." Approximately 90% of the students agreed with the statement, "I enjoy putting together a portfolio of my work." Four students' responses to the question on the survey "What did you like about the portfolio experience?" that relate to this outcome said they like portfolios because it shows off their work. In addition, during the student interviews, the (L) student stated,

I learned so much from portfolio assessment. Looking at what I have made and grading me on that is better

than paper and pencil tests. Some students in class made 100 on the sewing test, but they can't sew.

The (N) student had no comment, but the (D) student said, "I like paper and pencil tests better, because I can express myself better on those tests than I can with portfolios."

### Summary

Sue introduced portfolio assessment to her students by sharing the benefits of portfolio assessment with them. The purpose of her portfolio assessment plan was to reflect how much her students had learned and how far they had come in learning a new skill over a semester. She did not change any aspect of her portfolio plan during implementation.

The most successful part of this experience for Sue was spending time with her students evaluating their work together. This process aided Sue in documenting her students' achievement. She learned through using portfolio assessment that her students learned best from their mistakes and that her slow students did a better job of including all their work in their portfolio than her gifted students. She also indicated that portfolio assessment was a better method of assessing students' performance skills than paper-and-pencil tests. Thus, portfolio assessment was a valuable tool for showing student growth.

Assessment linked to instruction was also important to Sue. Use of portfolio assessment made Sue think about what

she was teaching, how she presented material, and what she expected of her students. During the stage two reflection, She had said portfolio assessment was a means of updating the teacher's curriculum. She organized the competencies she needed to teach for VoCATS while viewing students' work in their portfolios. Sue checked off the competencies she had taught and focused her attention on what was necessary to teach her students. Thus, the student portfolio assessment model used in this study provided Sue with a means of linking instruction with assessment.

Through use of portfolio assessment, students in Sue's class learned how to evaluate their own work. The highest mean on the student survey item pertained to learning how to judge their own work ( $\bar{X}=4.40$ ). Student interviews provided additional evidence in relation to evaluating their work. Also, the students' portfolios contained written comments about evaluating their class projects.

Students had the same means for two items on the survey that reflected positive attitudes toward portfolio assessment. They indicated they were proud of their portfolio ( $\bar{X}=4.40$ ), and they enjoyed putting their portfolio together ( $\bar{X}=4.40$ ). Two of the three students interviewed had positive attitudes toward portfolio assessment as well.

As a result of using portfolios, students were able to relate classroom activities to real-life situations. The students indicated on the survey that they had made use of

information taught in their class ( $\bar{X}=4.00$ ); however, the lowest mean ( $\bar{X}=3.10$ ) pertained to their class not being more related to their life. They disagreed with the survey item that they had not seen changes in themselves since using portfolio assessment ( $\bar{X}=2.20$ ). The students also became actively involved in their class while using this assessment tool. Students had the third highest mean ( $\bar{X}=3.90$ ) in response to an item on the survey about students being more involved in what they were learning.

In addition, portfolio assessment provided students with the opportunity to reflect on their work and communicate with their teacher. They indicated on the survey that portfolio assessment had helped them reflect about their work ( $\bar{X}=3.80$ ) and they were comfortable talking to their teacher ( $\bar{X}=3.80$ ).

### Case Three

#### Teacher and Site Description

Leslie has taught high school business education courses for approximately 5 years. She holds a bachelor's degree in business education and presently teaches business office system skills. Prior to the workshop, her method of assessment was paper-and-pencil tests.

The total student population at Leslie's school was 1,366, with 819 or 59.9% of the students enrolled in vocational classes. The total number of students in her class was 11 females. Leslie has taught at this high school for

3 years, and she uses individualized instruction and class demonstrations as her basic teaching strategy. The class meets every day in the office system's lab and students are allowed to consult each other on class work and projects. The course is designed to teach students about different opportunities in an office, the duties of those positions, and some skills (e.g., filing, 10-key calculators, phone skills, human relations, and interviewing skills). The number of units included in the second semester of the school year was two.

#### Stage One and Two Reflections

During the workshop Leslie stated her current concern with student achievement was "not setting realistic goals for students." Her stage one reflections of portfolio assessment prior to the workshop were "students and teachers use portfolios to observe progress in related work. Portfolios can also be a plan for students to reflect on the course as a whole and specific goals they may have set." After the workshop Leslie added to her stage one reflections that "portfolios paint a picture of student abilities over time." Her stage two reflection added to her stage one reflection. Her stage two reflections were consistent with the literature.



### Leslie's Implementation Process

Leslie introduced portfolio assessment to her students by sharing with them the purpose of their portfolio which was to develop a career portfolio. The students in Leslie's class were interested in the idea of a career portfolio since most of them would be interviewing for jobs during the summer and in their class they were studying interviewing techniques. Each student was provided a list of items that had to be placed in their portfolio. The students' portfolios contained only their best work. The career portfolios contained a table of contents, student's resume, cover letter, completed job application, and skills needed for interviews. There was evidence of student self-reflection and evaluation of their work, but there was no evidence of written feedback from Leslie. Leslie did not assign a grade to her students' portfolios.

The reaction of leslie's students during the introductory period was positive. She said that her students were enthusiastic about keeping a portfolio of their work because they could use it for job interviews. None of Leslie's students indicated they had had exposure to portfolio assessment in other classes.

### Fourth Week Implementation Meeting

Leslie stated her greatest success thus far was communication with her students. She stated:

The portfolios provide the structure and opportunity to sit down with my students one-on-one and discuss their career goals, what both they and I saw as their strengths and areas where they needed improvement, and it gave them the responsibility of combining all the items in a career portfolio.

However, Leslie indicated that it was difficult for her to continue to work on competencies she needed to cover and the portfolio at the same time. To remedy this problem, Leslie provided a list of competencies to be covered in class. As the competencies were taught, students checked them off their list.

#### Classroom Visits by the Researcher

The researcher visited Leslie's classroom on four occasions. During the first visit with Leslie, the researcher observed students sitting individually composing cover letters on the computer. Leslie was assisting one student with her writing. During the 45-minute visit, the researcher observed students communicating with each other about portfolio items. The student portfolios were located in a filing cabinet next to Leslie's desk. All students were involved with the assignment and openly communicating with their teacher.

During the second and third visits, the researcher interacted with the students by asking them about their reactions to keeping a portfolio of their work. Comments from two of the students were, "It's different" and "I can use my portfolio to help me get a job."

On the third visit, the students were observed evaluating each other's resumes. The students did not seem to mind their fellow students evaluating their work. One student said, "This helps me write a better resume by seeing how others have typed their resume." Their portfolios were structured in that they contained a table of contents, letter of introduction, list of items to include, student self-reflections about assignments, and students' evaluation of their portfolio.

The researcher shared with Leslie the dates for the student interviews and survey, and also scheduled the teacher interview in May. During the visits, discipline problems were not observed, and Leslie maintained one-on-one communication with her students and the students communicated freely with each other. Leslie indicated that she had student/teacher conferences twice a week and peer evaluations once a week.

#### Leslie's Perspective of Student Portfolio Assessment

Documentation of students' learning processes and progress. During the teacher interview Leslie stated:

My students enjoyed having a special place to keep their work. We spent one-on-one time discussing their portfolio work, and anything they needed to talk about. Students knew they were getting feedback and responded by caring about their product.

Leslie further indicated that portfolio assessment had revealed the strengths and weaknesses of her students.

It has helped my students with organizational skills that they did not have prior to the experience. Students have been able to ask questions about their work and get feedback as to how they can improve.

Portfolio assessment was beneficial to Leslie. She stated, "The communication between myself and the students has been very beneficial. Students learning about their career goals and my expectations has been helpful." Leslie also indicated it was beneficial to her students because of the one-on-one communication. She wrote in her teacher log that she learned by using portfolios that students appreciate the time spent discussing their strengths and weaknesses.

An alternative assessment method that is student-centered. Leslie wrote in her teacher log that "Using portfolios has helped me and my students see their individual strengths and weaknesses." She added, "It gives them more responsibility and it allows the students the opportunity to evaluate their work and their progress." During the teacher interview Leslie stated, "Students knew they were getting feedback and they responded by caring more about their products."

Assessment information linked to instruction. Leslie said during the teacher interview that "Student/teacher conferences have enabled me to set realistic goals for my students and for my students to set goals for themselves." She added that portfolio assessment has affected her teaching by "keeping me focused on what I am teaching and helping

my students focus in on their learning." She wrote in her log, "When I evaluate my students' work I can 'see' the skills they have learned." In addition, Leslie said, "During the interview, I give my students more individual instruction and they get instant feedback from me."

Assessing higher-order thinking skills, problem-solving, and decision-making skills. Leslie did not indicate whether use of portfolios had helped her assess higher-order thinking skills, problem-solving, and decision-making skills of her students. She said during the teacher interview that "I didn't assess higher-order thinking skills."

Few discipline problems. Leslie did not comment during the teacher interview on any relationship between discipline problems and the use of portfolio assessment in her class. The researcher did not observe discipline problems during the informal observations. Also, responses to questions in the teacher log did not include discipline as a problem. Therefore, there was no evidence to support or not support this outcome in Leslie's class.

Communicating frequently with students. Leslie indicated during the teacher interview that portfolio assessment "definitely improved one-on-one communication with my students." Informal observations by the researcher also documented frequent communication between the students and Leslie. She also wrote in her teacher log that

I pull out items from their portfolio and we go over the assignments. We discuss anything they are having problems completing, and what they have accomplished. The students have said they like talking to me about their career portfolios.

A positive attitude toward portfolio assessment. Leslie indicated in her teacher log that she "liked doing it because it allowed me more time to get to know my students." She made similar comments during the teacher interview. Leslie's enthusiasm toward using portfolios was observed by the researcher during informal observations.

#### Students' Perspectives of Portfolio Assessment

Students taking ownership of their learning. Of the 11 students responding to the survey in Leslie's class, over 80% of the students agreed that portfolio assessment was helping them depend on themselves (Table 5). Seventy-three percent of the students in Leslie's class believed portfolio assessment had caused them to figure out the answer to a question before asking the teacher for help, 64% indicated that they had seen changes in themselves since using portfolio assessment. Student responses to the question on the student survey about what they had learned about themselves during the portfolio experience that related to this outcome varied. Four students indicated that they had learned how to depend on themselves, three said the work they had accomplished when given enough time and effort to put in it, and

Table 5

Leslie's Students' Responses on Survey

	<u>Agree</u>		<u>Uncertain</u>		<u>Disagree</u>		$\bar{X}$
	n	%	n	%	n	%	
1. I have learned how to judge my own work.	9	81.8	1	9.1	1	9.1	4.00
2. Portfolio assessment is not helping me depend on myself for what I learn.	1	9.1	1	9.1	9	81.9	1.90
3. I enjoy putting together a portfolio of my work.	11	100					4.63
4. I like paper-and-pencil tests better than portfolio assessment.	1	9.1	2	18.2	8	72.8	2.09
5. I am proud of my portfolio.	11	100					4.81
6. I feel more involved in what I am learning as a result of portfolio assessment.	11	100					4.54
7. Putting together a portfolio of my work is a waste of time.					11	100	1.27
8. I don't like talking about my portfolio work with classmates.			1	9.1	10	90.9	1.72
9. Portfolio assessment has helped me reflect about my work more than I did before.	11	100					4.36
10. Portfolio assessment has not increased my participation in class.			2	18.2	9	81.9	1.72

Table 5 (continued)

	<u>Agree</u>		<u>Uncertain</u>		<u>Disagree</u>		$\bar{X}$
	n	%	n	%	n	%	
11. Portfolio assessment has caused me to try to figure out the answer to a question before asking my teacher for help.	8	72.8	2	18.2	1	9.1	4.00
12. When my teacher gives me a project to do, I do my work without thinking about how I did it.	2	18.2	4	36.4	5	45.5	2.54
13. I feel comfortable talking to my teacher about my portfolio.	11	100					4.63
14. As a result of using portfolio assessment, I have made use of information taught in this class.	11	100					4.45
15. I do not see any changes that I have made in myself since using portfolio assessment.	2	18.2	2	18.2	7	63.7	2.45
16. This class seems more related to my life now that we are using portfolio assessment.	7	63.7	3	27.3	1	9.1	3.90

Note. A=strongly agree + agree, U=uncertain, D=disagree + strongly disagree.



three students stated that they had learned how to communicate and improve their work. One student commented that she had learned how to write.

Two of the three students indicated during the student interview that portfolio assessment had helped them take ownership of their learning. The (L) student said, "It has helped me organize my thoughts better, I could think about how I wanted to do things, and it has helped me to evaluate my work." The (N) student stated, "When I go to college, I can look back at it and see what I have accomplished."

Student opportunity to reflect on their work. The students' responses to the survey indicate that all of the students (100%) thought portfolio assessment has helped them reflect on their work more than they had before. Student interviews revealed that two of the three students thought self-reflection was easy. The (L) student said, "It was easy. I could write it down, because I knew what was being asked of me. The teacher gave me questions to use in self-reflecting." Also, the (N) student provided a similar comment about how easy it was for her to reflect on her work. Leslie commented during the teacher interview, "I begin with a description of how I evaluate myself. Once they started reflecting on their work it became easier. However, it was difficult for them to do at first."

Recognizing that the processes used to complete a project and the product are inseparable. Some students in

Leslie's class were able to see the relationship between process and product. Forty-six percent of the students agreed with the statement on the student survey that they thought about how they did their work when the teacher gave them assignments. Comments from the student interview indicated that the three students saw the relationship between process and product. The students were asked whether pieces in their portfolio were mostly process, product, or both, and if they saw the relationship between process and product. The (L) student said, "In our class we did a career portfolio that contains my best work, so I think my portfolio is more product than process." The (N) student said, "Yes, I can see a relationship. I think my portfolio is more product." A similar comment was made by the (D) student who said, "Most of the items in my portfolio are products."

Students evaluating their own work. Approximately 82% of Leslie's students agreed that portfolio assessment had taught them how to judge their work. Also, comments from six students on the survey about what they liked about the portfolio experience related to this outcome; they indicated it gave them a chance to evaluate their own work and judge their mistakes. During the student interviews all three students indicated they had not changed their minds about any of the pieces in their portfolio after evaluating their work. When asked, "If you had to select one piece from your portfolio as your best piece, what would it be and why?"

two of the three students indicated their resume was their best piece, and one student thought her cover letter was the best.

Students actively involved in learning. On the student survey all of Leslie's students (100%) agreed that they were more involved in what they were learning as a result of portfolio assessment. In response to another item, 81% agreed that portfolio assessment had increased their participation in class. None of the students interviewed mentioned that they had increased their participation in class as a result of using portfolios. Ninety-one percent agreed they liked talking about their portfolio work with classmates. The students were observed by the researcher during informal observations evaluating each other's work. Leslie called this activity 'peer evaluations.' Leslie had asked a counselor from another high school to teach her students how to evaluate each other's work by using constructive criticism.

Communicating frequently with their teacher about their learning. All of the students (100%) indicated on the student survey that they were comfortable talking about their portfolio with their teacher. Also, comments made during the student interviews indicated that the three students were comfortable discussing their portfolio with their teacher.

Students relating classroom activities to real-life situations. Because the purpose of their portfolio was a career portfolio, the students used their portfolio for job

interviews. In fact, all of the students (100%) indicated on the student survey that as a result of using portfolio assessment, they had made use of information taught in their class. Approximately 64% of the students had seen changes in themselves as a result of using portfolios. Also, 64% thought the class was more related to their life as a result of using portfolios. On another survey item that asked students to state "What did you like about the portfolio experience?" five students said their career portfolio would help them during job interviews for summer employment.

Positive attitude toward portfolio assessment. All of the students (100%) indicated on the student survey that they were proud of their portfolio. Students disagreed (73%) with the statement "I like paper-and-pencil tests better than portfolio assessment." All of the students (100%) disagreed with the statement "Putting together a portfolio of my work is a waste of time." Also, all the students (100%) agreed with the statement "I enjoy putting together a portfolio of my work." In addition, two of the three students interviewed made positive comments about portfolio assessment. The (L) student said, "I think it shows more about what I have learned and can do than paper-and-pencil tests." The (N) student stated, "I liked keeping my portfolio because I can use it." Comments from the (D) student did not relate to this outcome. Leslie indicated in her teacher log, "Most of my students were excited about the career portfolio."

### Summary

Leslie introduced portfolio assessment to her students by sharing the purpose which was to develop a career portfolio. She also discussed self-reflection and selection of items. Leslie added peer evaluations to her portfolio assessment plan.

The most successful part of this experience for Leslie was communication with her students. Through student/teacher conferences, Leslie learned what her students' career goals were, and her students learned what she expected of them. She further indicated that portfolio assessment had revealed the strengths and weaknesses of her students. She said that her students appreciated the time she spent with them discussing their strengths and weaknesses. Thus, documentation of her students' learning, communication, and assessment that is student-centered were important to Leslie.

Assessment information linked to instruction was another important outcome. Leslie indicated that portfolio assessment had affected her teaching by keeping both her and her students focused on learning. Thus, the student portfolio assessment model used in this study enabled Leslie to link instruction with assessment.

Students in Leslie's class had a positive attitude toward their career portfolios. They had the highest mean in response to an item on the student survey about how proud

they were of their portfolio ( $\bar{X}=4.81$ ). On another item, they indicated that they enjoyed putting together their career portfolio ( $\bar{X}=4.63$ ).

Communicating with Leslie about their portfolio was important to her students. They indicated on the survey that they were comfortable talking to her about their portfolio ( $\bar{X}=4.63$ ). Comments made during the student interviews further indicated that Leslie's students talked to her often. Field notes from classroom visits also document frequent communication between Leslie and her students.

The students were actively involved in what they were learning in class. As a result of using portfolio assessment, the students indicated on the survey that they were more involved in what they were learning ( $\bar{X}=4.54$ ). Furthermore, use of portfolio assessment had helped the students to relate classroom activities to real-life situations and to use information taught in this class. In addition, student portfolios provided further evidence of students relating classroom activities to real-life situations.

Portfolio assessment helped the students learn how to reflect on their work; the sixth highest mean ( $\bar{X}=4.36$ ). Also, by using portfolio assessment the students learned how to evaluate their own work and take responsibility for their own learning. Both items on the survey pertaining to those outcomes had a mean of 4.00. The students indicated that they had learned how to judge their own work and solve

problems about class work on their own. Their portfolios provided evidence of student self-reflection and evaluation of their work.

#### Case Four

##### Teacher and Site Description

Joan has taught high school home economics courses for 2 years. She holds a bachelor's degree in home economics education and presently teaches Teen Living and Foods and Nutrition. Prior to the workshops, her method of assessment was paper and pencil tests and performance tests in lab assignments.

The total student population at Joan's school was 1245, with 741 or 59.5% of the students enrolled in vocational classes. The total number of students in the class was 14: 10 females and 4 males. Joan has taught at this high school for 1 year, and she uses lecture and questions from the textbook as her basic teaching strategy. The class meets every day in the sewing lab and students work individually on class assignments, with group work activities in the lab. The course is designed to provide students with an overview of home economics. The number of units included in the second semester of the school year was one.

##### Stage One and Two Reflections

During the workshop Joan stated her current concern with student achievement was "students asking if this was

for a grade." Her stage one reflection of portfolio assessment prior to the workshop was "assessing how well the students are learning the material through a portfolio of their work." After the workshop her viewpoint of portfolio assessment changed. Joan wrote:

It is a collection of student work that gives a picture of the student. The work needs to be meaningful to the student in some way. The portfolio is a reflection of the student.

In Joan's stage two reflections, she expanded her view of portfolio assessment to include a collection of student work, classroom work that is meaningful, and portfolios as a reflection of the student. Her stage two reflections were consistent with the literature.

#### Joan's Implementation Process

Joan introduced portfolio assessment to her students by telling her students it would be a collection of their class work that was to be graded. She did not share with her students components of her portfolio plan. Joan's purpose for portfolios was a collection of students' work (e.g., projects, evaluation of labs, and their input and criticisms of what they had accomplished). She decided on this purpose because "I have learning disabled students in my class and I did not want to set too high a purpose to start off with." Joan did not have criteria for selecting portfolio items. She said,



If I had started this at the beginning of the year, I probably would have criteria. But I started my class out with working portfolios and at the end of the year we will have our final presentation portfolio. The items in the portfolios were class projects.

Although Joan developed criteria for judging most of her students' work, her students were not given the opportunity to judge their own work. Because Joan did not have criteria for selecting portfolio items, it was difficult to describe student portfolios in Joan's class since many of the students had included different items and some students had included a few items. She used the traditional 7-point grading scale to assign grades to individual pieces in her students' portfolios (i.e., 93-100=A, 92-85=B, and so on).

The reaction of Joan's students during the introductory period was positive. She said that her students were interested in the concept of portfolio assessment and excited about participating in a study.

#### Fourth Week Implementation Meeting

Joan said her greatest success thus far was students having input in the class because of using portfolios. She said,

I feel that the students liked seeing a collection of what they had done. It was there in the classroom and they added to it each week. By letting them decorate their folders it was a reflection of their personality. They felt they had input in the class because I told them I wanted to know how they felt about what we were doing.

However, Joan indicated that use of portfolios in her class was not motivating some of her students to do their work. She said, "The students who did not do anything as a rule, did nothing with this." Joan did not mention how she planned to motivate her students. Instead, she commented, "I think if I was a more experienced teacher with a good set of classroom files, I could provide my students with more interesting activities to include in their portfolio."

#### Classroom Visits by the Researcher

The researcher visited Joan's classroom on four occasions. During the first visit with Joan, the researcher observed students sitting at tables in rooms reading from a home economics textbook. Joan was seated behind her desk. During the 45-minute visit, the researcher did not observe students working with their portfolio. Joan was constantly asking her students to be quiet and sit down, or get to work. The students did not seem to be responding to Joan's authority. A few students in class were sleeping and Joan did not disturb them.

The second and third visits took place in March and April. The researcher attempted to interact with the students on both visits, but the students ignored the researcher. Discipline in Joan's class had not improved.

On the third visit, the students were using their portfolios. Their portfolios were unstructured in that they did

not contain a table of contents, letter of introduction, list of items to include, and students' evaluation of their portfolio. There was evidence of student self-reflection, and some students had more work in their portfolios than others.

Joan still had discipline problems. Of the 45 minutes the researcher observed the class, Joan spent approximately the first 20 minutes of class trying to gain control of her students. The students stopped their disruptive behavior when Joan threatened them with not cooking in Foods Lab the next day.

On this visit the researcher shared with Joan the dates for the student interviews and survey and scheduled the teacher interview in May. During the visits, discipline was a problem. Students' behavior in class did not seem to improve over the course of the classroom visits. Communication between Joan and her students was also a problem. Joan indicated that it was difficult for her to schedule student/teacher conferences weekly because she had to watch her class.

#### Joan's Perspective of Student Portfolio Assessment

Documentation of students' learning processes and progress. During the teacher interview Joan stated,

I think knowing that they would have to write about what they saw and did made them more observant as learners. It made them remember what they had learned. Especially when I gave the class tests. I did not

review for tests other than using the teacher conference to review their work that was in their portfolio. Students absent from class appeared to be somewhat defensive because they had not placed items in their portfolio.

She added,

Students with learning problems did much better with hands-on activities. This form of assessment gives students who do not test well an opportunity to do well. I was really amazed at some of the art work on the covers, as well as some of the projects that were done.

Joan also indicated during the interview that

Portfolio assessment has given me additional insights about my students that I would not have had. I feel I can better teach them because I know what their strengths and weaknesses are now. I don't think paper-and-pencil tests actually show students' strengths and weaknesses.

Portfolio assessment was beneficial for her students because "It has given them a non-threatening method to communicate with me. They felt that they could tell me what they really thought and I would not get mad."

An alternative assessment method that is student-centered. Joan wrote in her teacher log:

I can see areas where my students need extra attention and areas they excel. As a new teacher, it has helped me to get to know my students. I am beginning to think that portfolios are better than keeping a notebook. My students like having input into what goes on in class.

During the teacher interview Joan provided insights about her students when she said:

I think portfolios are an additional method of assessment that should be used with the student population that vocational programs now get. Maybe I shouldn't say that, I probably should say with the student population I now get.

Assessment linked to instruction. During the teacher interview Joan indicated that portfolio assessment had affected her teaching: "This method makes me do other things. It has made me plan more hands-on activities and class projects. I think I have relied on too much book work and work sheets in the past." In her teacher log Joan wrote: "I use the students' work in their portfolios to review for classroom tests."

Assessing higher-order thinking skills, decision-making skills, and problem-solving skills. Joan did not assess higher-order thinking skills of her students. She stated during the teacher interview:

I did not know how to do this and I didn't have time to create activities that would indicate evidence of higher-order thinking of my students. I have such low-level students that I'm not sure this is possible.

Few discipline problems. Joan indicated during the teacher interview that "I spent a lot of time trying to maintain discipline in my class." The researcher observed discipline problems in Joan's class during the informal observations. Using portfolio assessment did not seem to improve discipline in Joan's class.

Communicating frequently with students. During the teacher interview Joan indicated that portfolio assessment had provided her students with a non-threatening method to communicate with her. But Joan also stated that she could not schedule student/teacher conferences weekly because she had to watch her class. Data used to document this outcome conflicted with what the researcher observed and statements made by Joan.

Positive attitude toward portfolio assessment. It was not clear if Joan had a positive attitude toward portfolio assessment as evidenced by her responses during the teacher interview. When she made comments about it she mentioned how the use of portfolios had helped to see her students' accomplishments. But she also said,

You have to be a well-organized teacher. Activities must be created for it. New teachers do not have a lot of plans for things that will easily fit in a portfolio and are easy to do in a class period.

In response to another item during the teacher interview Joan stated, "It is a good tool to follow a student's growth throughout the year. It is a collection that s/he can be proud of and point to." Thus, when Joan thought of portfolio assessment in terms of her students, she seemed to have a positive attitude toward it, but when she thought of using portfolios as a teacher her comments were not as clear.

Students' Perspective of Portfolio Assessment

Students taking ownership of their learning. Of the 14 students responding to the survey in Joan's class, over one-third agreed that portfolio assessment was helping them depend on themselves (Table 6). However, about 20% of the students disagreed with the statement. Over one-half of the students in Joan's class believed portfolio assessment has caused them to figure out the answer to a question before asking the teacher for help. Approximately 36% of the students indicated they had not seen changes in themselves as a result of using portfolio assessment. Student responses to the question on the student survey about what they had learned about themselves during the portfolio experience related to this outcome. Three students stated they know more about themselves, and three other students thought they could do better work when they think about it. There were two who said they were more intelligent than they thought, and two indicated that they were not getting in as much trouble. However, two students stated that they had not learned anything about themselves, while another student indicated that he learned how to do many different things.

The three students interviewed indicated that portfolio assessment had helped them take ownership of their learning. The (L) student said, "It has helped me get my thoughts straight and think about how I wanted to do things." The (N) student stated, "I could go back and see how to write

Table 6

Joan's Students' Responses on Survey

	<u>Agree</u>		<u>Uncertain</u>		<u>Disagree</u>		<u><math>\bar{X}</math></u>
	n	%	n	%	n	%	
1. I have learned how to judge my own work.	9	64.3	4	28.6	1	7.1	3.79
2. Portfolio assessment is not helping me depend on myself for what I learn.	3	21.4	6	42.9	5	35.7	2.78
3. I enjoy putting together a portfolio of my work.	9	64.3	4	28.6	1	7.1	3.78
4. I like paper-and-pencil tests better than portfolio assessment.	5	35.7	2	14.3	7	50	2.85
5. I am proud of my portfolio.	10	71.5	3	21.4	1	7.1	3.85
6. I feel more involved in what I am learning as a result of portfolio assessment.	7	53.9	5	38.5	1	7.7	3.53
7. Putting together a portfolio of my work is a waste of time.	4	30.8	2	15.4	7	53.3	2.84
8. I don't like talking about my portfolio work with classmates.	6	42.9	5	35.7	3	21.4	3.28
9. Portfolio assessment has helped me reflect about my work more than I did before.	6	42.8	4	28.6	4	28.6	3.07
10. Portfolio assessment has not increased my participation in class.	5	35.7	7	50	2	14.2	3.28



Table 6 (continued)

	<u>Agree</u>		<u>Uncertain</u>		<u>Disagree</u>		$\bar{X}$
	n	%	n	%	n	%	
11. Portfolio assessment has caused me to try to figure out the answer to a question before asking my teacher for help.	8	57.1	5	35.7	1	7.1	3.64
12. When my teacher gives me a project to do, I do my work without thinking about how I did it.	2	14.3	5	35.7	1	7.1	2.42
13. I feel comfortable talking to my teacher about my portfolio.	6	42.8	5	35.7	3	21.4	3.35
14. As a result of using portfolio assessment, I have made use of information taught in this class.	4	28.6	8	57.1	2	14.2	3.21
15. I do not see any changes that I have made in myself since using portfolio assessment.	5	35.7	5	35.7	4	28.5	2.92
16. This class seems more related to my life now that we are using portfolio assessment.	4	28.5	5	35.7	5	35.7	2.85

Note. A=strongly agree + agree, U=uncertain, D=disagree + strongly disagree.

about different things and what I experienced." The (D) student said, "I guess it's helped me to be more organized. I have a lot of things about sewing and floor plans in my portfolio."

Opportunity to reflect on their work. The students' responses to the student survey indicate that 43% of the students thought that portfolio assessment has helped them reflect about their work more than they had before. Student interviews revealed that students had difficulty with self-reflection. The (L) student said, "The only thing difficult for me was that the teacher told me I was always critical of my work. Well, it's difficult for me to say good things about my work because it's not perfect." The (N) student stated, "It wasn't that easy. I didn't like writing about it; I'd rather talk about it." The (D) student indicated that "it was hard for me and I didn't know how."

Recognizing that the processes used to complete a project and the product are inseparable. Of the 14 students that were administered the survey, only 8 students provided a response to the item "When my teacher gives me a project to do, I do my work without thinking about how I did it." Fifty percent of the students disagreed with the statement, and 14% agreed. Comments from the student interview indicated that the three students saw the relationship between process and product. The (L) student said, "I think most of

my work is both. The apron I made wouldn't have been completed if I had not followed the directions on the pattern." The (N) student stated, "Probably both--I think I made the connection. I haven't thought about it before." The (D) student stated, "In my Teen Living class I think my work is both. You can't do one without the other, can you?"

Evaluating their own work. Approximately 64% of Joan's students agreed that portfolio assessment had taught them how to judge their own work. When asked during the interview "If you had to select one piece from your portfolio as your best piece, what would it be and why?" the three students indicated they did have a best piece. The (L) student said, "the housing project I did. I designed my living room and bedroom. I want to be an interior designer and I had fun putting fabrics and color together." The (N) student stated, "my floor plan. I did a good job on it. I worked hard." The (D) student said, "I guess my floor plan. It was the only thing I enjoyed doing in this class and someday I want to make floor plans for my house."

Students being actively involved in learning. On the student survey, over one-half of Joan's students agreed that they were more involved in what they were learning as a result of portfolio assessment. In response to another item, 36% of the students agreed that portfolio assessment had not increased their participation in class; 50% were uncertain. In addition, 43% of the students agreed with the

statement, "I don't like talking about my portfolio work with classmates." Students stated during the interviews that they were more organized in class, but none of them reported increased participation in class.

Communicating frequently with their teachers about their learning. Approximately 43% of the students indicated on the student survey that they were comfortable talking about their portfolio with their teacher, 36% were undecided, and about 21% disagreed with the statement. The student interviews indicated that the three students were comfortable discussing their work with their teacher. The (L) student said, "I like talking to my teacher. She lets me express my opinions, and I wasn't afraid to tell her how I felt." The (N) student stated, "We get along well, so I enjoyed talking to her about class stuff." The (D) student indicated "It was okay with me. I'm not a talker, but we talked about my work in my portfolio."

Students relating classroom activities to real-life situations. Approximately 57% of the students in Joan's class indicated on the student survey that they were not certain whether they had made use of information taught in their class as a result of portfolio assessment. Thirty-six percent of the students agreed with the statement, "I do not see any changes that I have made in myself since using portfolio assessment," and 39% disagreed with the statement. In addition, 39% of the students agreed that their class seemed more related to their life as a result of using portfolios.

A positive attitude toward portfolio assessment. The students indicated in the survey that they were proud of their portfolio, with 82% agreeing with the statement. Fifty percent of the students disagreed with the statement, "I like paper-and-pencil tests better than portfolio assessment." Approximately half (53%) of the students disagreed with the statement "Putting together a portfolio of my work is a waste of time." On another survey item that asked students to indicate "What do you like about the portfolio experience?" six students indicated they liked portfolios because they were something they could do in class. During the student interviews, the (L) student commented, "I don't do well on tests, and I don't make good grades, but I've made better grades since I started keeping a portfolio." The (D) student indicated that "Keeping my portfolio has taught me more about myself than paper-and-pencil tests." However, the (N) student said, "Not really, I didn't like it. Portfolios take too much time and I couldn't keep up." Joan indicated on her teacher log, "At first they were resistant, but I don't think I used enough time to explain student portfolios to them. Once the students got in the habit of keeping a portfolio, they were okay with it."

### Summary

Joan introduced portfolio assessment to her students by telling them it would be a collection of their work that was to be graded. The purpose of her portfolio plan was a

collection of student work. She did not share other components of her plan with her students. Joan did not change her portfolio plan during implementation.

The most successful part of this experience for Joan was students having input in classroom activities. She learned through using portfolio assessment that her slow students were performing better in class. However, use of portfolios did not motivate some of her students in class. She stated that some of her students were not doing anything in class before using portfolios, and portfolio assessment did not seem to motivate them either.

Portfolio assessment gave Joan additional insights about her students (e.g., students with learning problems did much better with hands-on activities). She further indicated that portfolio use had revealed her students' strengths and weaknesses, and this enabled her to be a better teacher.

Joan thought that this alternative assessment method was student-centered. She said that her students liked having input in class. Through viewing her students' portfolios she could see the areas that her students needed extra attention and areas where they had excelled.

Portfolios provided Joan with an assessment method linked to instruction. She used the work in the students' portfolios to review for tests. This method also affected her teaching. Joan began using more hands-on activities and class projects, and she relied less on book work and work

sheets. Thus, the student portfolio assessment model used in this study provided Joan with a tool to link instruction with assessment.

In Joan's classroom, portfolio assessment did not seem to have a positive effect on her students' behavior. She had stated that discipline was a problem in her classroom. However, use of portfolios had no effect on this outcome.

Communicating frequently with her students was a problem for Joan. Although she indicated that portfolio assessment had provided her students with a non-threatening method to communicate with her, scheduling student/teacher conferences was difficult due in part to discipline problems.

Some students in Joan's class had a positive attitude toward portfolio assessment. On the student survey, the students' highest mean pertained to being proud of their portfolio ( $\bar{X}=3.85$ ). They also indicated on another item that they enjoyed putting together a portfolio of their work ( $\bar{X}=3.78$ ).

Portfolio assessment helped some of Joan's students learn how to evaluate their own work. This item received the second highest mean in response to learning how to judge their own work ( $X=3.79$ ). However, no evidence of students' evaluating their own work was found in their portfolios.

Students in Joan's class did not seem to relate classroom activities to real-life situations as a result of

portfolio assessment. The lowest mean on the survey was for the item about their class being more related to their life now ( $\bar{X}=2.85$ ). Information from student interviews provided no evidence to support this outcome.

As a result of using portfolio assessment, some of Joan's students indicated on the survey that they tried to figure out the answer to class work on their own ( $\bar{X}=3.64$ ). Also, some of her students thought they were more involved in what they were learning ( $\bar{X}=3.53$ ).

#### Summary and Discussion

The use of portfolios in the four teachers' classrooms was identified by reviewing both the teachers' and students' perspectives of the portfolio assessment model. In addition, stage one and two reflections, relationship of findings to the model, and implications for portfolio use in vocational education were identified.

#### Stage One and Two Reflections

Stage one reflections represented participants' prior knowledge of portfolio assessment and their current concerns related to student assessment. After the workshop, stage two reflections represented how participants' views of portfolio assessment had changed, and whether portfolio assessment had answered their concerns related to student assessment. Three of the four teachers had similar stage one reflections: Sue, Leslie, and Joan. Their responses



included a collection of students' work, progress, and evaluation; Sudie's stage one reflection was a method to evaluate curriculum and teaching. After the workshop, two of the four teachers' stage two reflections were similar. Both Leslie and Joan mentioned that portfolio assessment painted a picture of students' work. Thus, their stage two reflections were similar to an assertion made by Valencia (1990) about portfolios capturing a richer array of what students know and can do. Joan added that it was a reflection of students' work that needs to be meaningful. Also, Sudie and Sue's stage two reflections were similar. They mentioned students taking responsibility for their learning and evaluating their own work, and using portfolios to update the teacher's curriculum. Their stage two reflections agreed with the view that portfolios encourage students to be actively involved in the assessment process (Stiggins, 1992).

#### Relationship of Findings to the Portfolio Assessment Model

Purpose. Purpose is the key component in any student portfolio (Arter & Spandel, 1992). The purpose selected in each teacher's classroom determined all other components of the model. The four teachers selected different purposes for their portfolio assessment plan. Sudie's purpose was to document student achievement. Sue had as her purpose a reflection of how much her students had learned and how

they had improved on learning a new skill over a semester. Leslie's purpose was to develop a career portfolio, and Joan's purpose was a collection of student work. Each teacher's purpose was clearly defined and affected other important decisions pertaining to their portfolio plan (e.g., content, criteria for selection, and the link to instruction).

Content. Content was different in each of the four teachers' classrooms. One teacher implemented the portfolio plan in her computer application class, and another business teacher implemented her portfolio plan in business education. One of the home economics teachers implemented her plan in a clothing construction class, and the other home economics teacher implemented her portfolio plan in Teen Living. It did not matter which content area was used for implementation in terms of the success of the portfolio model. Arter and Spandel (1992) had maintained that this portfolio assessment model could be used in any subject area.

Criteria for selection. Criteria for selection had a positive influence on students' participation in portfolio activities and self-reflection. Three of the four teachers developed criteria for selecting portfolio items and one teacher did not. Students in Sue's classroom included all their work in the portfolios. This had no effect on students' participation in class, but it did create a problem for Sue in storing her students' portfolios.

Criteria for judging merit. All four teachers had criteria for judging merit of their students' portfolios. One teacher did not share this criteria with her students, and the students in her class did not know which pieces in their portfolios were to be graded and were reluctant to participate in portfolio assessment. Students were motivated to do portfolios in the three teachers' classrooms who shared the information with their students.

Student reflection. As ongoing, systematic collections of students' works, portfolios provide a framework for student self-assessment (Tierney, Carter, & Desai, 1991). Students in two of the four teachers' classes (Sudie and Sue) indicated that the student outcome that was most important to them was learning how to evaluate their own work through self-reflection. Arter and Spandel (1992) noted that through self-reflection, students would begin to evaluate their own work.

It is important for students to be able to monitor their own learning so they can adjust what they have done when they perceive they are not understanding (Jongsma, 1989; McLean, 1990). Two of the teachers indicated documentation of their students' learning and assessment that is student-centered were important to them. Thus, student self-reflection was an important component of the portfolio assessment model used in this study.

Student/teacher discussion. Arter and Spandel (1992) suggested that portfolio assessment would improve communication with teachers and students. Through student and teacher discussion of portfolios, the teachers in this study indicated that communication had improved with their students. One teacher mentioned that communication with her students was the most successful part of her portfolio experience. Through discussing portfolios with their students, the teachers learned what their goals were and areas in which they needed assistance.

Communication with their teacher was also important to the students in this study. Communicating frequently with their teacher about their strengths and weaknesses helped them improve their work. Thus, using portfolio assessment enhanced communication (Arter & Spandel, 1992). This extends previous research (Tierney, Carter, & Desai, 1991).

Peer evaluation. Only one teacher used peer evaluations in her portfolio plan. The teacher decided to add the component to her plan after her students asked if they could evaluate their colleagues' work. This component of the model affected how students evaluated their work, and it seemed to increase students' participation in classroom activities. However, peer evaluations should be used only if the students are mature and have been taught how to

evaluate others' work. Arter and Spandel (1992) offered a similar caution when using peer evaluation.

Teacher review and assessment. All of the teachers in this study indicated that students' work in their portfolios improved over time because of continuous teacher feedback. The purpose of the teachers' portfolio plan determined whether the student portfolios were graded. Two of the four teachers did not grade their students' portfolios because of the purpose of their portfolio plan. The two teachers who graded their students' portfolios used the traditional grading method to assign grades to individual portfolio items.

Link to instruction. Student portfolios are an intersection of instruction and assessment. Portfolios are neither instruction nor assessment; they are both instruction and assessment (Paulson & Paulson, 1990). In fact, the portfolio assessment model was designed to integrate instruction and assessment (Arter & Spandel, 1992). The four teachers indicated that the teacher outcome that had the most impact on their experience was assessment linked to instruction. This portfolio assessment model provided them with an opportunity to adopt an alternative means of assessing their students' work, the curriculum, and their own teaching strategies.

### Implications for Future Use of Portfolio Assessment

Findings of this study provide evidence that use of this portfolio assessment can be beneficial to teachers and students. It is important that portfolio assessment plans be designed carefully to ensure that stakeholders make accurate conclusions about what the portfolios show (Arter & Spandel, 1992). For example, work in the students' portfolios should reflect what the student knows and can do. Educators considering using portfolio assessment in their classrooms need time to develop their plans, preferably with other educators, to discuss ideas and develop portfolio activities. The researcher also recommends that teachers involve their students in the planning process so they can provide input during the process.

Another important point pertains to purpose. The purpose of the portfolio plan needs to be clearly defined because it affects all other components of the model. Students will not know what is expected of them if the purpose of the portfolio is unclear. Teachers should think carefully about what they want their students' portfolios to reflect about them.

How teachers introduce portfolio assessment to their students determines their students' reactions to portfolio assessment. Teachers in this study who discussed portfolio assessment with their students indicated that their students had positive attitudes toward their portfolio experience.

Sharing information about assessment with students seemed to have a relationship to successful results. For example, the teacher who did not share the criteria for judging merit with her students had students who scored the lowest on the survey item related to students evaluating their own work.

If students are to relate classroom activities to real-life situations using portfolio assessment, then teachers need to relate their classroom activities as close to real-life situations as much as possible. The use of portfolio assessment in all four teachers' classrooms in this study had little effect on students' ability to relate classroom activities to real-life situations. One teacher in this study had as the purpose of her portfolio assessment plan to develop a career portfolio. Her students had the highest means on all the student survey items, and they were able to relate what they did in class to real-life situations.

Many of the participants who attended the workshop indicated that they were not ready to change their way of thinking about assessment. If this study were repeated, participants need release time to learn about alternative assessment. They need support from the school administration. This approach offered a change in thinking about curriculum, teaching, and assessment.

The results of the study indicate that portfolio use in the four teachers' classrooms was successful in relation to integrating assessment with instruction. However, some of the proposed teacher outcomes were not documented, i.e., assessing higher-order thinking skills and few discipline problems. Success of this assessment method seems to be related to the way teachers introduce portfolio assessment to their students and the purpose of the portfolio.

The researcher further suggests that the portfolio assessment model be implemented at the beginning of the school year. Teachers explained that it was difficult to implement during the second semester because classroom routines had already been established.

This study supported other research which indicated that portfolio assessment has the potential of achieving the teacher and student outcomes presented. Thus, when implemented properly, portfolio assessment is an effective teaching, learning, and assessment tool for both teachers and students.



CHAPTER V  
SUMMARY AND RECOMMENDATIONS

Summary

The purpose of this study was to introduce a student portfolio assessment model via staff development activities and to assist secondary vocational teachers in implementing the use of student portfolios in their classrooms. Three objectives were selected for this study: (a) Assess effectiveness of staff development activities for secondary vocational teachers related to use of portfolio assessment; (b) describe experiences of vocational teachers and students in the implementation of the portfolio assessment model; and (c) assess the implementation of student portfolio assessment in terms of student and teacher outcomes in the secondary vocational classroom.

Prior to this study, formal evaluations of the portfolio assessment model presented had not been conducted (Arter & Spandel, 1992; Northwest Evaluation Association, 1990). This was also the first documented study conducted in vocational education about the use of portfolio assessment.

The portfolio assessment model used in this study was developed by Dr. Judy Arter and Vickie Spandel in collaboration with other researchers (Arter & Paulson, 1991; Collins,

Macintosh, 1989; Murphy & Smith, 1990; Northwest Evaluation Association, 1989; Roettger & Szymczuk, 1990; Vavrus, 1990). This model was selected by the researcher because it was developed for using portfolios of student work in instruction and assessment. The researcher of this study composed the graphic display of the model that connected the components to show the relationship between instruction and assessment.

Staff development was selected as the vehicle for introduction of the student portfolio assessment model over a 10-hour, 2-day period. Participants engaged in various portfolio activities to assist them in developing their portfolio assessment plan.

Measurement of participants' prior knowledge of portfolio assessment was used as a stage one reflection. Participants described in writing their concepts of portfolios and were asked to describe their current concerns in relation to the questions again. This represented their stage two reflections.

Both qualitative and quantitative evaluation methods were used: teacher monthly logs and interviews, researcher field notes, student surveys and interviews, and student portfolios. The interview questions for both students and teachers were designed by the researcher.

Teacher interview questions focused on implementation of the portfolio assessment model, and the student interviews

focused on their reactions to the portfolio experience. The purpose of the teacher log was to record information pertaining to portfolio model activities in their classrooms by three categories: implementation of model, students' reactions, and teacher reactions. Lastly, the student survey was used to determine their reactions toward the portfolio assessment experience.

Data were summarized according to the expected student and teacher outcomes of this study. The following teacher outcomes were identified:

1. documentation of students' learning processes and progress,
2. an alternative assessment method that is student-centered,
3. assessment information linked to instruction,
4. assessment of higher-order thinking skills, problem-solving, and decision-making skills,
5. few discipline problems,
6. frequent communication with their students, and
7. a positive attitude toward portfolio assessment.

Student outcomes identified were:

1. ownership of their learning,,
2. opportunity to reflect on their work,
3. recognition that processes used to complete a project and the product are inseparable,

4. evaluation of their own work,
5. active involvement in learning,
6. communication with their teachers about their learning,
7. classroom activities related to real-life situations, and
8. a positive attitude toward portfolio assessment.

The student portfolio assessment model was useful in assisting the four teachers in the development of an alternative method of assessing their students. The purpose of each teacher's portfolio plan was of prime importance. It affected all other components of the model. Student self-reflection, student/teacher discussions, and the link to instruction were some of the components of the model that seemed to have the most impact on students' evaluating their own work and participating in classroom activities.

The evidence from the four cases suggest that this portfolio assessment model was successful for integrating assessment with instruction. The teacher and student outcomes that were the most frequently identified in this study were students evaluating their own work, assessment linked to instruction, frequent communication between teachers and students, documentation of their students' learning, and positive student attitudes toward portfolio assessment.

### Recommendations

Based on the results of this study, recommendations for future research on use of portfolio assessment are as follows:

1. It is suggested that this study be replicated to study the impact of portfolio assessment in other vocational areas and other subject areas.
2. It is suggested that portfolio assessment be incorporated with VoCATS to provide a complete picture of student achievement in vocational subject areas.
3. In view of the findings, activities need to be developed for portfolio assessment use to document students' higher-order thinking skills.
4. Activities need to be developed to assist teachers with providing students with real-life situations in the classroom.
5. Research should be conducted to determine if use of portfolio assessment affects discipline problems.
6. Further research needs to be conducted to determine the effects portfolio assessment has on curriculum, instruction, and assessment.
7. In view of the responses some of the students made during interviews and on the survey, research needs to be conducted to determine the relationship between portfolio assessment and student self-esteem.

8. Since two of the teachers made comments about how well their learning disabled students performed while using portfolio assessment, research needs to be conducted in this area to provide further evidence.

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APPENDIX A  
LETTER TO VOCATIONAL EDUCATORS,  
VOCATIONAL TEACHER INTERVIEW QUESTIONS, AND  
TEACHER MONTHLY LOG

November 17, 1992

To: Vocational Educators  
From: Sharon Johnson  
Via: Joe Miller & Osbert Haynes  
Re: Staff development opportunity

Start your New Year off with a bang! Come join this exciting opportunity to enhance the current methods used to evaluate student achievement in vocational education. The Greensboro City School Vocational Department, in conjunction with Sharon Johnson, are sponsoring a workshop titled "Student Portfolio Assessment in Vocational Education." The workshop will be held on Friday, January 15th, from 4:00 pm to 7:00 pm; and Saturday, January 16th, from 8:30 am to 4:30 pm.

Portfolio assessment is the latest buzz word in educational circles. As a participant, you will provide assistance in filling in the framework used for the development of the model, and implement the portfolio assessment model in your classroom. In addition, the researcher (Sharon Johnson) will work with each participant throughout the semester as part of a study to evaluate the implementation of the portfolio assessment model in secondary vocational course(s).

If you decide to participate in this staff development opportunity, you will receive 1 hour of certification credit renewal and a \$50.00 stipend provided by the Vocational Department. Space is limited, so send in your response today and be part of creating an innovative approach in student assessment. Indicate by a check beside the appropriate response and return your reply to Sharon Johnson (coordinator of the portfolio assessment workshop), Research and Evaluation Department, Greensboro City School system.

This is your opportunity to become a pioneer in the area of assessment in vocational education. Participation is determined by first come, first served basis, so send your reply today.

\_\_\_\_\_ Yes, I will participate in the workshop.

\_\_\_\_\_ No, I will not participate in the workshop.

## Vocational Teacher Interview Questions

1. What was the purpose(s) of portfolio assessment for your classroom? How did you decide what purpose(s) to select for your class?
2. How did you introduce portfolio assessment to your students?
3. How were the criteria developed for selecting items to put in the students' portfolio?
4. What means did you use to prompt students to self-reflect? Was this difficult or easy for them to do? Was there any change in their ability to do this?
5. How were the criteria developed for judging merit of the students' portfolio? How did students respond to judging their own work?
6. After implementing portfolio assessment in your classroom, what changes, if any, did you notice about student ownership of their learning? What changes, if any, did you notice about student behavior? What changes, if any, did you notice about student participation?
7. What effect has portfolio assessment had on your communication with your students?
8. What effect has portfolio assessment had on your knowledge of students' strengths and weaknesses? Please explain. What did you learn about students from the portfolios that you might not learn from other methods of assessment?)
9. Overall, in what ways has portfolio assessment been beneficial to you as a teacher?
10. In what ways has portfolio assessment been beneficial to your students?

11. Did this method address any concerns you have about assessment? Explain.
12. In what ways has portfolio assessment affected your teaching?
13. What is the most important thing you learned from this experience that you would like to share with other educators?
14. To what extent has portfolio assessment helped you assess your students' higher order thinking skills, decision-making skills, and problem-solving skills? Explain.
15. Other comments:

## Teacher Monthly Log

Directions: Please record your response to each category frequently. You may add additional information if you wish.

Date: \_\_\_\_\_

Implementation of model

1. To what extent did your plan for implementation of portfolio assessment resemble the one the group planned during staff development?
2. What modifications were made in the plan during implementation/ (If no modifications in plan were made, skip the question.)
3. What is included in your schedule of portfolio activity for a week?

Students

1. How did your students react to portfolio assessment?
2. If students did not react favorably, what do you suggest for next time?
3. What measures have you taken to motivate students to participate in portfolio model activities?
4. How often do you have student conferences?
5. What do you discuss with your students during the conferences?

Teacher reaction

1. What did you like about using portfolio assessment today?

2. What did you dislike about portfolio assessment today?
3. What are your suggestions for next time?
4. What have you learned by using portfolio assessment?
5. What changes, if any, do you suggest be made with the portfolio assessment model?
6. What are your questions and concerns about assessment?
7. What questions and concerns has portfolio assessment answered for you?
8. Other comments:

APPENDIX B  
STUDENT INTERVIEW QUESTIONS

## Student Interview Questions

(The researcher will go through the student's portfolio and ask them questions about their portfolio.)

1. How do you feel about using portfolios as a record of what you've learned?
2. How has putting together a portfolio of your work helped you as a student?
3. What did you dislike about the portfolio experience?
4. How did you know what to include in your portfolio?  
How did you select the pieces to put in your portfolio?
5. a. Are there any pieces in your portfolio that you have changed your mind about over time--any that you liked before but do not like now, or any that you did not like before that you like now/ If so, which ones?  
  
b. What made you change your mind about these pieces?
6. What is your favorite piece in your portfolio? Why is it your favorite piece?
7. What was the hardest piece in your portfolio to do? Why was it hard?
8. If you had to select one piece from your portfolio as your "best piece," what would it be and why?
9. Do you think your portfolio shows others more or less about what you have learned and can do than paper and pencil tests show about you? Why or why not?
10. What did you learn about yourself from portfolio assessment?



11. Do you think the portfolio experience has helped you to be a better student? If so, how? If not, why not?
12. How easy or difficult was it for you to self-reflect on your work? Explain.
13. How were the criteria developed to judge the work in your portfolio? How did you feel about this?
14. Do you feel more comfortable discussing your work with your teacher? Explain.
15. If you could change anything about the portfolio experience that you think would make it better, what would it be and why?
16. Other comments:

## Vocational Student Survey

Directions: Circle the response that best describes your feelings about portfolio assessment. Please circle only one response per question.

5 = strongly agree (SA)  
 4 = agree (A)  
 3 = uncertain (U)  
 2 = disagree (D)  
 1 = strongly disagree (SD)

	<u>SA</u>	<u>A</u>	<u>U</u>	<u>D</u>	<u>SD</u>
1. I have learned how to judge my own work.	5	4	3	2	1
2. Portfolio assessment is not helping me depend on myself for what I learn.	5	4	3	2	1
3. I enjoy putting together a portfolio of my work.	5	4	3	2	1
4. I like paper-and-pencil tests better than portfolio assessment.	5	4	3	2	1
5. I am proud of my portfolio.	5	4	3	2	1
6. I feel more involved in what I am learning as a result of portfolio assessment.	5	4	3	2	1
7. Putting together a portfolio of my work is a waste of time.	5	4	3	2	1
8. I don't like talking about my portfolio work with classmates.	5	4	3	2	1
9. Portfolio assessment has helped me reflect about my work more than I did before.	5	4	3	2	1
10. Portfolio assessment has not increased my participation in class.	5	4	3	2	1

	<u>SA</u>	<u>A</u>	<u>U</u>	<u>D</u>	<u>SD</u>
11. Portfolio assessment has caused me to try to figure out the answer to a question before asking my teacher for help.	5	4	3	2	1
12. When my teacher gives me a project to do, I do my work without thinking about how I did it.	5	4	3	2	1
13. I feel comfortable talking to my teacher about my portfolio.	5	4	3	2	1
14. As a result of using portfolio assessment, I have made use of information taught in this class.	5	4	3	2	1
15. I do not see any changes that I have made in myself since using portfolio assessment.	5	4	3	2	1
16. This class seems more related to my life now that we are using portfolio assessment.	5	4	3	2	1

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Directions: Please respond to each question in writing.

17. What did you like about the portfolio experience?
18. What did you dislike about the portfolio experience?
19. Describe what you have learned about yourself during the portfolio experience.
20. Other comments:

APPENDIX C  
TEACHER DESCRIPTION FORM  
AND SITE DESCRIPTION FORM

## Teacher Description Form

Teacher identification code (e.g., a, b, c...): \_\_\_\_\_

Vocational subject taught: \_\_\_\_\_

Number of years teaching: \_\_\_\_\_

Grade level(s) taught: \_\_\_\_\_

Highest college degree: \_\_\_\_\_

Demographic information:

race: African American \_\_\_\_\_

Asian \_\_\_\_\_

Caucasian \_\_\_\_\_

Hispanic \_\_\_\_\_

Native American \_\_\_\_\_

Other \_\_\_\_\_

gender: female \_\_\_\_\_

male \_\_\_\_\_

Methods of assessment currently used: \_\_\_\_\_

\_\_\_\_\_

## Site Description Form

School identification number (e.g., 01, 02...): \_\_\_\_\_

Total school student population: \_\_\_\_\_

Total number of students enrolled  
in vocational course(s): \_\_\_\_\_

## Classroom environment:

Basic teaching strategies \_\_\_\_\_

lab \_\_\_\_\_

structured \_\_\_\_\_

group work \_\_\_\_\_

Description of course: \_\_\_\_\_

number of units included in second semester: \_\_\_\_\_

Number of students in class: \_\_\_\_\_

number female: \_\_\_\_\_

number male: \_\_\_\_\_

APPENDIX D  
CROSSWALK FOR EXPECTED OUTCOMES OF STUDY

Crosswalk for Expected Outcomes of Study

Outcomes	Instruments			
I. Teacher Outcomes	Teacher Interview	Student Interview	Student Survey	T-Log
1. documentation of of their students learning processes and progress	Q1, Q6, Q9, Q11 Q15, Q20			Q3
2. an alternative assessment method that is student-centered	Q1, Q4, Q10, Q11, Q15, Q16, Q20			Teach React Q7
3. assessment information linked to instruction	Q1, Q11, Q15, Q17, Q18, Q20			Teach-Re Q4
4. assessment of higher order thinking skills, problem-solving and decision-making skills	Q1, Q6, Q11, Q15, Q20			
5. few discipline problems	Q1, Q6, Q11, Q15, Q20			
6. frequent communication with their students	Q1, Q8, Q11, Q15, Q20			Stu-Re Q4-5
7. exhibit a positive attitude toward portfolio assessment	Q13, Q15, Q20			Teach-Re Q1-2



Outcomes

Instruments

II. Student Outcomes	Teacher Interview	Student Interview	Student Survey	T-Log
1. ownership of their learning	Q3, Q7, Q12	Q1-2, Q10-11, Q20	Q2, Q11, Q19	Stu-Re Q16
2. opportunity to reflect on their work	Q4, Q12	Q1-2, Q5-9, Q11-13, Q20	Q9, Q19	
3. recognition that the processes used to complete a project and the product are inseparable	Q12	Q1-2, Q6-9, Q11-12, Q20	Q12, Q19	
4. evaluation of their own work	Q5, Q12	Q1-2, Q7-9, Q11-12, Q14, Q20	Q1, Q8-9, Q19	
5. active involvement in learning	Q12	Q1-2, Q8-9, Q11-12, Q16, Q20	Q6, Q10, Q19	
6. communication with their teachers about their learning	Q12	Q1-2, Q11-12, Q15, Q20	Q13, Q19	
7. classroom activities related to real life situations	Q12	Q1-2, Q11-12, Q20	Q14-16, Q19	
8. a positive attitude toward portfolio assessment	Q5, Q12	Q1-3, Q10-12, Q14	Q3-5, Q7, Q17-19	Stu-Re Q1-2