

Portfolio Thoughts & Recommendations for Science Teacher Education Majors

The portfolio is a work in progress that is meant to demonstrate the following:

- Who are you becoming as a teacher – what is special about who you are as a teacher? What sets you apart from the rest? What experiences have had that led you to those realizations?
- How do you perceive your development as a teacher in the first few years after graduation? What are your goals beyond your induction years?

Portfolios should contain the HIGHLIGHTS of you as a teacher. A portfolio is NOT a scrapbook for everything you did during student teaching. An appropriate structure would be:

1. Introductory Essay explaining how the portfolio is organized and how it reveals.
2. Three (or four) Tabbed sections that each consists of a combination of:
 - (a) a page explaining the significance of the materials that immediately follow and
 - (b) a carefully selected set of materials (student work, lesson plans, photographs, etc.) that illustrate your claims about your teaching self.

Consider each section to consist of two pieces: the NARRATIVE (what you write) and the ARTIFACT (what you include as evidence). My favorite analogy is that the narrative is the plaque at a zoo or museum that explains what is on display while the artifact is the bird or painting. The combination allows someone else to see the “real thing” but benefits from being told about the significance of what is on display. Depending upon your philosophy of teaching, you might include artifacts that demonstrate the following:

Technician Teacher	Professional Teacher	Activist Teacher
<ul style="list-style-type: none"> ○ Teaching Strategies ○ Ed. Technology ○ Meeting Standards 	<ul style="list-style-type: none"> ○ Instructional Delivery ○ Assessment Methods ○ Professional Growth 	<ul style="list-style-type: none"> ○ School/Community Relations ○ Inclusion & Differentiation ○ Advocacy for Change

The portfolio should be an accurate and professional reflection of you. In general, it is probably better to be somewhat conservative. It shouldn't be bulky, sloppy or cumbersome. Ideally, it will be a resource you will have ready during your interview in the event that it contributes to the discussion. In other words, don't lead with the portfolio. Instead, have it ready in case you find an opportunity to incorporate it into the conversation. Finally, it would not be a complete loss if you never share it during the interview because the process of compiling it has helped you to rehearse how you represent yourself to potential employers.

PORTFOLIO DEVELOPMENT FOR TEACHER CANDIDATES

ERIC Digest. ERIC Identifier: ED481816 Publication Date: 2003-06-00 Author: Takona, James P.

The portfolio has been defined as "a systematic and organized collection of evidence used by the teacher and student to monitor growth of the student's knowledge, skills, and attitudes in a specific subject area" (Blake et al., 1995). Others (DeBruin-Parecki, et al., 1997) have provided a more contemporary view which envisions the portfolio as "a purposeful, collaborative, self-reflective collection of student work generated during the process of instruction." This Digest is intended to help teacher candidates systematically gauge their progress toward the teaching profession by developing a portfolio. More importantly, it is intended to help teacher candidates think reflectively on their decisions and experiences.

WHY DO TEACHER CANDIDATES NEED A PORTFOLIO?

The dynamics of the current U.S. educational reform movement have led to renewed emphasis on teacher quality and preparation (USDE, 2002). In recent years, the National Council for Teacher Education has redefined its set of standards for accrediting teacher education programs and begun requiring documentation of the impact pre-service teachers have on the learning of their students. The NCATE 2000 standards also require teacher education programs to assess the performance of pre-service teachers over time using multiple measures and linking performance to institutional, state, and professional standards (NCATE, 2000). As a result, teacher education programs are adopting portfolios as one means to assess pre-service teachers in a performance-based standards environment. Some licensing agencies also require portfolios, and they are a major requirement for experienced teachers seeking board certification from the National Board for Professional Teaching Standards.

WHAT BELONGS IN A PORTFOLIO?

The contents of a portfolio depend on what it is intended to demonstrate to whom. It is very common for instructors, licensing agencies, or certification bodies to establish guidelines for portfolio development. Portfolios might include written work such as reports, term papers, graded tests and assignments, lesson/unit plans, artwork, lists of professional books and articles read, lists of conferences attended and sample materials from those conferences, letters from parents, notes from students, and video recordings of teaching. Products might come from multiple sources, including course work, field experiences, and volunteer activities in student groups, churches, or professional organizations. What keeps the portfolio from simply being a scrapbook is the reflection the teacher candidate undertakes regarding what each artifact demonstrates about his or her educational philosophy, learning, and professional growth and development.

HOW CAN TEACHER EDUCATION CANDIDATES DEVELOP PORTFOLIOS?

Portfolio development may be considered an ongoing and dynamic process that involves four stages: collection, reflection, reduction, and display (Takona, 2002).

1. **Collection.** Pre-service teachers should keep their term papers, tests, and projects from each class, along with a good inventory list of their material, in a safe container. Most people do much more than they are aware of, and collecting portfolio artifacts several semesters later will simply not provide an accurate enough picture of a teacher candidate's development. Teacher candidates should also keep creative work, membership cards and letters to or from professional societies, evaluations from clinical supervisors or cooperating teachers, and the like, for possible inclusion in the portfolio.

When it is time to develop a portfolio, the teacher education candidate will sort through the accumulated material with an eye toward demonstrating mastery, or the path toward mastery, of standards required of him or her. This step requires a good understanding of the performance standards by which the candidate will be judged and careful selection of the artifacts that best illustrate growth and development attained as a result of gaining mastery of various instructional objectives. Teacher candidates may wish to collect both their worst and their best products to show gains and improvements. If students find at the end of a semester that they are lacking in a specific area, they can discuss the situation with their academic advisors and map out a plan to develop that area.
2. **Reflection.** Reflection entails being able to step back from the immediacy of the situation and examine knowledge, skills, beliefs, attitudes, values, and behavior in a dispassionate manner. Reflection is that kind of "thinking that extracts meaning from experiences as a mechanism to propel development" (Guillaume & Yopp, 1995, p. 96). Or, as Richert (1990) puts it, reflection is the "ability to think about what one does and why. Reflection influences how one grows as a professional by influencing how successfully one is able to learn from one's experiences" (p.525).

Teacher candidates typically select artifacts to serve as evidence that they have met stated objectives and prepare short written abstracts that link the artifacts to the specific standards. They may explain why they choose to include a particular artifact, how it compares with other artifacts, what particular skills and knowledge were used to produce it, and what the artifact suggests about where they can improve. When teacher candidates use their reflections to set goals for future learning, the portfolio becomes a lifelong learning tool. It is recommended that for each performance outcome indicator, teacher candidates write a statement about what they still need to learn in that area and set some reasonable goals so that they can work toward achieving that particular performance standard in a reasonable period.
3. **Reduction.** In the reduction stage, portfolio artifacts that demonstrate mastery or path toward mastery of specified performance outcomes are selected. Artifacts may have the potential to demonstrate mastery of more than one performance outcome. Through artifact reduction, teacher candidates focus, select, abstract and transform documents to meet the standard. Since teacher portfolios serve dual purposes as a self- and collaborative assessment and evaluation tool, it is

important that the artifacts chosen for inclusion in the portfolio have personal meaning for the prospective teacher.

One way to categorize items that might be included is to divide them into three categories based on the source of the item:

- Materials from oneself (e.g., reflective statements, term papers, graded assignments and homework, quizzes and examinations);
- Materials from others (e.g., student comments, evaluations made by student teaching supervisor); and
- Products of field experiences activities (e.g., student work samples that may include essays and creative work, a record of students' grades).

A good portfolio has variety. Claims about attainment of specified competencies will be most convincing to readers when they are supported by documentation from a variety of sources. Some choose to include letters from their students (unsolicited letters are preferable to solicited) or from peers, regarding their teaching, or a listing of former students who have been successful. Others consider incorporating evidence of their growth and development, such as lab books that demonstrate improvement throughout the particular course. Video footage from actual classes and classroom activities from field experiences assignments may also be included. The final selection of materials for the portfolio requires self-reflection. Campbell, et al. (2000) recommend the following steps:

- Select an artifact for the portfolio.
- Mentally review the activity and reflect upon the process and product.
- Reflect on the greatest value of this activity or experience. Connect that value to one of the standards.
- Write a rationale about the selection. Include why the piece was chosen, what was learned or gained, and what related goals have been set.

It is possible that some artifacts selected to be included in the initial portfolio will someday be replaced by those not selected ("dormant artifacts"). These artifacts may not immediately appear as appropriate evidence to address a performance outcome, but may become meaningful over time.

4. **Display.** The final stage of the portfolio development cycle is artifact display, the organization of selected artifacts in a visually appealing manner to demonstrate mastery of performance outcomes and to permit a comprehensive review by a panel. An institution might establish rules for portfolio content and format, including page limit, design and focus, or the depth and opportunities for reflection. If teacher candidates have choices, they should design their portfolios to present a case for learning and growth consistent with their philosophy of education.

A well-designed portfolio is aesthetically appealing and easy to navigate. A standard portfolio requires a three-ring binder. If an institution has no specifications, a 2-inch, three-ring binder with a clear cover and inside pockets works well. Teacher candidates should consider using color-coded section dividers, a table of contents, and consecutive numbering of all documents in the portfolio (even though some may have an internal numbering system).

Research has shown that students who develop portfolios grow in their understanding of themselves as learners when they see the need and seek guidance and support from their instructors (Gomez, Grau, and Block, 1991). Peers can serve as partners in reflection activities and provide different perspectives. A student who has already completed a portfolio may be a particularly helpful source of ideas and help.

Academic advisors or members of possible assessment panels also provide an opportunity to influence reflection efforts. By gaining an understanding of how different people see their portfolios and see them as developing teachers, teacher candidates gain a fuller, more balanced view of themselves and their work.

From this discussion, it is obvious that portfolio development is not a scavenger hunt that results in the creation of a scrapbook. Rather, it is "a responsive and purposeful activity that engages reflective capacities of pre-service teachers to isolate growth and development within learning incidences against preset criteria" (Takona, 2002, p.53). The portfolio must therefore contain a repertoire of performances over time to paint a rich developmental portrait of learning and professional development and growth.

REFERENCES

- Blake, J., Bachman, J., Frys, M., Holbert, P., Ivan, T., & Sellitto, P. (1995). A portfolio-based assessment model for teachers: Encouraging professional growth. *NASSP Bulletin*, 79 (573), 37-46.
- Campbell, Dorothy M., et al. (2000). *Portfolio and Performance Assessment in Teacher Education*. Boston, MA: Allyn and Bacon.
- Debruin-Parecki, A., Boaz, M., Shaw, E., Yeager, E., Visscher, S., & Lehan, M. (March, 1997). Preservice teachers and the development of their self-initiated professional portfolios. Paper presented at the annual meeting of the Michigan Reading Conference, Grand Rapids, MI.
- Gomez, M.L., Grau, M.E., & Block, M.N. (1991). Reassessing portfolio assessment: Rhetoric and reality. *Language arts*, 68, 620-628.
- Guillaume, A. M., & Yopp, H. K. (1995). Professional portfolios for student teachers. *Teacher Education Quarterly*, 22 (1), 93-101
- NCATE. (2000). Groundbreaking teacher preparation standards to be used beginning next year; revolution in teacher preparation and training just ahead. Online <http://www.ncate.org/2000/pressrelease.htm>
- Richert, A. E. (1990). Teaching students to reflect: A consideration of program structure. *Journal of Curriculum Studies*, 22,(6), 509-527
- Takona, James, P. (2002). *Pre-Service Teacher Portfolio Development*. Lincoln, NE: Writers Club Press.
- USDE. (2002). Meeting the highly qualified teacher challenge: The secretary's annual report on teacher quality. Washington, D.C.: U. S. Department of Education, Office of Postsecondary Education, Office of Policy Planning and Innovation.