



Portfolios: Conceptual Foundations and Functional Implications

Andreas Luescher and John W. Sinn

As is true at many institutions of higher learning, Bowling Green State University (BGSU) in Ohio is in the process of testing, rating, and adapting the portfolio as an addition to its arsenal of assessment tools with application to classroom, administrative, and professional development domains. The College of Technology at BGSU, in particular, has been exploring the nuts and bolts of portfolios with a focus on the transition of technical students to technical professionals.

Our thesis is that portfolios represent a heuristic methodology that yields a sensitive and adaptable indicator for the assessment of student development. The importance of marketing to academia cannot be ignored; even though many academics protest the corrupting influence of money on the purity of academic research, mar-

keting is irrefutably as much a part of the academy as it is the world of commerce (Kliment, 1998). Because of the portfolio's dual existence as a marketing tool and as a matrix for intellectual exploration and reflection, it is increasingly relevant to the marketing aspect of academia.

In this article we address several important areas that combine to illuminate the portfolio as performance, index, and design. We provide an in-depth look at the conceptual foundation and selected functional implications of portfolios. Accordingly, the foundations laid here may serve as a basis for further development and application to a comprehensive application of the portfolio methodology.

Background and Definition

The portfolio simultaneously adheres to

and defies the notion of an assessment tool. As a heuristic methodology, the portfolio offers opportunities for assessment of the work of oneself and of others in a context of professional and intellectual growth. This quality of heuristic, or self-instruction, is at the core of the portfolio's uncomfortable residence in the world of assessment. It transcends disciplinary boundaries and developmental hierarchies in application, but it is a notoriously hard format to pin down or quantify. The strength and the weakness of the portfolio format is that it foregrounds qualities of experience. Portfolio methodology showcases mechanical and imaginative skills. By nature this methodology also leads to inquisitiveness about possibilities and tangents; it also brings up questions about chronology and authenticity. Instead of pursuing the psychological or philosophical implications of the portfolio as a performance medium, we concentrate on the portfolio as an ideology that places the value of individual work efforts within the greater context of learning to think, which benefits artists and technicians, undergraduates, and mid-career professionals alike (Seguin, 1991).

The portfolio model stands in opposition to a value system that favors the individual measured against his peers. This is the world of standardized or quantitative experience. Instead, the portfolio represents a value system which emphasizes that which is immeasurable: the qualities of experience. This distinction tempers all implications of the portfolio as an assessment tool. Goffman's *The Presentation of Self in Everyday Life*, originally published in 1959, explores the details of individual identity, group relations, the impact of environment, and the movement and interactive meaning of information. His perspective, though limited in scope, provides significant insight into the nature of social interaction and the psychology of the individual. The actor performs interactively in order to present a compelling front. This process, known as "dramatic realization," is predicated upon the activities of "impression management," the control (or lack of control) and communication of information through the performance.

Equally controversial is the portfolio's dual existence as a matrix for intellectual exploration and reflection and as a marketing tool; portfolios will increasingly be used, particularly due to rele-

vant and purposeful direction, in an academic, professional, or personal career. As previously stated, marketing is as much a necessity in the academy as it is in the market. To the extent that portfolio assembly is concerned with the design and presentation of information, or "impression management," it can be seen as a corrupting factor, an insertion, or gloss obstructing the real or "authentic" evidence of knowledge possession (Goffman, 1959/1990). The question "Evidence of what?" comes from those who challenge the indices generated by standardized testing. What exactly is being measured: performance or possession? Does portfolio methodology tip the scales of assessment toward the form of information (interface, packaging, etc.) to the exclusion of its content? How adequately do portfolios straddle the blur between the qualitative and the interpretive?

Broadly represented in this article are several different types of portfolios including (a) a student portfolio: a show of accomplishments for a class; (b) a project portfolio: a documentary of project or independent study; (c) a personal portfolio: a scrapbook or collection of one's interests; (d) a professional portfolio: an organized collection of complex, performance-based evidence that indicates one's growth, goals, and current knowledge and skills needed to be competent in a role or area of expertise; and (e) a teaching portfolio: a selection of artifacts and reflective entries representing a teacher's professional experiences, teaching competencies, and growth over a period of time (Campbell & Brummett, 2002; Syre & Pesa, 2001).

Accordingly, our study supplies the following details as evidence that portfolios are a highly flexible instructional and assessment tool, adaptable to diverse curricula and administrative contexts.

Student Portfolio: Classroom and Administrative Uses

Questions surrounding portfolio implementation in the classroom since its introduction to the normative routine in the 1980s are those of process and strategy. Ideally, the portfolio crosses diverse curricular settings. Students are challenged to take charge of their personal collection of work, reflect on what makes some work better, and use this information to make improvements in future work. The portfolio is a way for teachers to structure student involvement in developing and understanding criteria

for good efforts, in coming to see the criteria as their own, and in applying the criteria to their own and other students' work (Campbell et al., 2000).

A decade of portfolio-specific research has shown that students benefit from an awareness of the processes and strategies involved in writing, solving a problem, researching a topic, analyzing information, or describing their own observations (Gardner, 1993). In building a portfolio of selected pieces and explaining the basis for their choices, students generate criteria for good work, with teacher and peer input.

Central to the importance of portfolio methodology is the idea of sensuality. It is the sensual appeal to the process of storing and retrieving information that distinguishes the portfolio as a didactic method. The portfolio is nothing so much as a mirror of the individual psyche. This leads to the central conflict surrounding the portfolio as an assessment methodology. Who "owns" the criteria? Who quantifies the assessment? Is it the individual performer or the audience?

Critics point to portfolio methodology as a symptom of *anomie* or loss of standards. Proponents of portfolio methodology point to a compromise between individual and societal requirements. In practical terms, "packaging" the component of portfolio, which asserts itself in ways that are uncomfortable to the notion of academic purity, questions whether the design of information supercedes and/or corrupts the authenticity of the information represented.

Our thesis is that the design and presentation of information—in other words, the emphasis on form—does not diminish the role of substance, skill, emotional content, worldview, or appropriateness. The principles of form are universal and immutable. They include compression, grasp of the essential, balance, and ideality. Form provides the spark without which content languishes. The portfolio as a methodology features the criteria of quality performance. The hope is that by engaging students in performance and critique they can apply these criteria to their own work and monitor their own progress, chronicling work and opening new channels for substantive communication.

Perhaps the key to the importance of portfolio methodology is the kinetic and haptic

dimensions the process adds to understanding and self-awareness. Portfolios provide a vehicle for instruction focused on the processes and strategies underlying effective performance. They allow accomplishments and growth to be identified and assessed in a context well beyond traditional classrooms. In essence, portfolios are defined as selected performance. Beyond that, definitions vary widely in relation to content, purpose, and structural elements (Campbell et al., 2000).

Both inside and outside of schools, observers are uneasy about what role portfolios, commercial tests, and other assessment tools should play in administrative activities. Questions have centered on the technical adequacy of portfolios for administrative decision making and reporting. Are they comprehensive enough? Are they reliable enough? Are assessments generalizable within a specific curriculum area? Inasmuch as portfolios allow identification of areas of weakness, academic institutions can employ portfolios as a means of assessing their success at meeting institutional goals. Indeed, student portfolios are being used for institutional accountability reporting, program evaluation, and a variety of administrative decisions affecting the future of individual students. Are portfolio systems sufficiently informative and technically strong enough for these added functions? Also, what is involved in making them adequate to the structural and content requirements of accountability, evaluation, and student-level administrative decisions?

Again, the crucial questions center on "authenticity." Are portfolios merely evidence revamped to satisfy technical requirements? Or can they still play a constructive role in teaching for understanding? Can portfolios answer to all calls and still motivate students to be active learners? Can the portfolio format be standardized without losing its classroom application, which foregrounds the expansion of the individual students' setting of self vis-à-vis society?

The shift to administrative evaluation and to the education system, in other words, away from individual students, teachers, and classrooms, introduces a broader and less well-defined audience. While administrative uses of the portfolio require increasing standardization (and at least a partial shift in ownership), a student's sense of ownership of his or her portfolio is linked with interest, motivation, and actual

engagement. Some compromise between centralized structure and local, classroom-level discretion may work just as well (Costantino & De Lorenzo, 2002).

Should there be unique courses to cover the redundancy at the heart of portfolio/self-reflective activities, and should this system exposure and control be integrated institutionally? The answer is yes. Furthermore, while a single course can—and should—be dedicated to the process of developing a portfolio, it is essential that subsequent courses reinforce the importance of adding to and refining one's portfolio materials. The portfolio model is a testament to the value of redundancy.

The Case for Portfolios, Added Definition, and Functional Approaches

The portfolio answers the requirements of an increasingly visual world as a visual document, but resumes and curriculum vitae have been the standard experimental summary in business and academia since the 1960s. Resumes and curriculum vitae were created at a time when informal networking and insider connections were suddenly inadequate as a delivery system for the numbers of new positions and applicants created by the postwar economic boom. Developed to efficiently compress pertinent information in a very particular way, resumes and curriculum vitae remain an essential career tool (Berryman, 1991, 1994; Porter, 2000). But the portfolio can be much more than a resume or collection of work.

Like professionals in any discipline, records of our activities accumulate in brief cases, file drawers, and Zip drives. It is from these various forms of documentation that we can extract a focused and coherent representation of our history. When applying for admission to graduate school, for tenure at a university, or when looking for a new position or freelance work, an applicant generally selects the finest examples to make the strongest case for his or her abilities and experience. Composed of good samples of past work presented in a clear, unambiguous, and accessible form, that document was a portfolio (Linton, 1996). The use of a portfolio goes beyond the mere collection of information as a cosmetic arrangement of loose pieces of work in a folder. The assembly of a portfolio is not merely about "looking good" (Scher, 1992); it is an essential documentary tool for anyone who does creative

work in any field.

Building the portfolio falls into *source* and *mini* or *disposable* approaches. Source portfolios contain original (non-reproduced) work whose security should be protected; pieces might be selected from source portfolios to take to interviews. By contrast, mini or disposable portfolios made up of reproductions of original work represent the difference between *ephemera* and *accretion*. The mini or disposable portfolio is a mass-produced version. An abbreviated introduction to one's work, the mini or disposable portfolio is generally made up of examples that are easy and affordable to reproduce.

In the same way that the student portfolios are adapted from older forms of presentation, professional portfolios are similar to the traditional resume and curriculum vitae. As job titles continue to become obsolete and as hiring practices shift from permanent and full-time workers to independent contractors, temps, consultants, and freelancers, traditional formats may offer an insufficient summary of one's experience (Kimeldorf, 1997). A portfolio offers hard evidence of problem solving by graphically revealing both the direction and depth of one's experience. It answers the "show-me" demands of employers and is, therefore, an important technique of self-presentation. Unlike the resume or the curriculum vitae, the portfolio emphasizes the qualities of experience rather than the objects or names of experience. The portfolio goes beyond merely talking about a topic or entry to actually demonstrating the issue or item under discussion.

Creative professionals are likely to assemble several portfolios in the span of a career. A personal portfolio is required to enter graduate programs in many disciplines while a project portfolio can measure the quality and dimension of one's undergraduate study. As a career develops, a professional portfolio includes updated samples and projects in progress. A personal portfolio functions purely as a method of self-reflection, often evolving into a source of propulsion toward new endeavors that, given time, eventually evolve or overlap in professional activities.

Making the Portfolio Happen: Student-Based Concerns

Familiarizing students with virtual presenta-

tion via electronic portfolios will help them to better understand the phenomenon of synchronic practice over a distance as well as communication and display protocols unique to remote collaborations. But how should this be done? Should there be unique courses to cover such activities, or should the act of developing a portfolio be integrated into all that is done for professional preparation? The answer is simple—both. Although a course can, and should, be dedicated to the process of developing a portfolio, it is essential that subsequent courses reinforce the importance of adding to and refining one's portfolio materials.

Students must transpose original portfolio items into electronic files. Like the traditional portfolio, the electronic portfolio is a performance. Both types of portfolio establish a narrative that is concerned with the linear piecing together of continuous or disconnected images and events. In addition, both types require decisions about how much space and emphasis to give to each successive visual event in the presentation. But the electronic portfolio is a performance with different dimensions, quite literally, from the traditional portfolio. It must be carefully managed if the "message" of the medium (i.e., the linkages) is to enhance rather than diminish the original material, primarily due to issues raised earlier.

Because of the freer and more varied technologies of image manipulation that are available, designing electronic portfolios differs from designing the traditional portfolio. The addition of movement and sound can enhance the presentation, but it also means that more must be managed and understood in construction. Questions to be addressed instructionally include awareness of solutions for structuring contents and navigation in a screen and time-based medium. Development of guidelines and criteria for the efficient streamlining of the process, including assessing work electronically, will be required (Cambridge, Kahn, Tompkins, & Yancey, 2001).

Development of electronic or multimedia portfolio instruction is imperative for teaching and for encouraging portfolio use among students. The complexities and sophistication of electronic programs make them difficult for one to utilize without some type of intentional instruction. Portfolio and presentation instruction is meant to provide a bridge between the student and professional worlds by offering stu-

dents the chance to see their work and themselves in the broader context of the marketplace. The goal is to link technical education and careers by working in the context of the way things are produced in the business world via practical skills (specifically, knowledge of strategies for collection, organization, design, and evaluation of an evolutionary document—the professional portfolio) for accomplishing personal marketing and presentation tasks (Marquand, 1985).

Electronic Opportunities and Challenges

If portfolio assembly is merely a matter of student transposition of original material to electronic files, the electronic portfolio is—like the traditional portfolio—a performance. Both portfolios establish a narrative that is concerned with the linear piecing together of continuous or disconnected images and events. Both portfolios also require decisions about how much space and emphasis to give to each successive visual event in the presentation. Similar to a paper portfolio, the electronic portfolio offers options and encourages evaluators to spend more time in the portfolio. Like paper portfolios, the electronic portfolio offers options for both linear and nonlinear navigation. It takes the form of a guided tour, helping to point evaluators toward particularly relevant pieces, just as it takes the form of random access, inviting intuitive investigation. The portfolio method can be navigated either way, allowing evaluators to decide which pathway (linear or nonlinear) is most appropriate at the time they review the portfolio. A consistent navigational scheme allows evaluators to find any particular piece with a minimum of effort and searching (Sanders, 2000).

While concerns about electronically supported portfolio practices exceeding physical boundaries are common, virtual conference and collaboration is more convenient and less expensive. Telegraphy follows on the heels of telephony. Familiarizing students with virtual presentation via electronic portfolios, especially in the realm of technology education, clearly provides an essential exercise in synchronic practice over a distance, particularly communication and display protocols unique to remote collaborations.

A central question remains: What is the bottom line applicability of the portfolio

method? Is it simply a demonstration of software knowledge? In some ways, it is. Development and refinement of digital media coupled with the explosion of Internet usage during the last five years has expanded a world culture increasingly mediated by electronic technology for visual presentation. An effective electronic presentation can demonstrate conceptual skills not evident in a traditional physical-static format. It involves skills in scripting, image sequence, and viewer navigation, and as such, it showcases one's ability to organize according to hierarchies, matrices, series, overlays, spatial issues, and parallel texts. Like theatrical, cinematic, or musical events, the electronic portfolio must be timed and paced to address the flow of information in a multidimensional, multisensual environment.

The drawbacks of electronic portfolios include the fact that they are implicitly measured against the mass media. Electronic portfolios must fit the playback hardware of the user or reader assessing the information. While technical advances may eventually overcome incompatibility issues, a major issue inherent in the electronic portfolio is the absence of the actual human presence. The spontaneous response and the physical interaction are removed in the traditional sense when moved from a physical document or presentation to an electronic portfolio. Questions about electronic portfolio security are also of concern, as is the ability to know who actually completed the work being viewed electronically. Ironically, portability (i.e., system compatibility) between sender and receiver is a source of awkward and clumsy communication transmission.

Functional Implications

The model in Figure 1 is a conceptual layout of a portfolio system-process for undergraduate studies in the professional curriculum. This model shows portfolio checkpoints, or stepped phases, for assuring that students are successful from start to finish. Checkpoints also provide potential involvement by students in student organizations and other broad-based university-wide experiences.

The checkpoints include several key steps, phasing the portfolio assessment over the entire degree process:

- Checkpoint I: Initial phase—collecting and organizing all work.
 1. Fundamental skills

2. Technical skills
3. Practical skills
4. Ethical skills

The second checkpoint engages students in determining when and how to integrate important activities such as co-ops into their experience.

- Checkpoint II: Portfolio assessment—planning and evaluation.
 1. Find strength and weakness
 2. Evaluate university/college/departmental/program performance
 3. Develop goals for future growth
 4. Review accreditation standards (i.e., NAIT)

The third checkpoint broadens the student perspective to include a phase with participation with professional senior members through conferences and advisory committees as part of the broader assessment system based on refinement, further design, and actual production.

- Checkpoint III: Portfolio refinement—design and production.
 1. Employ written and graphic modes of communication
 2. Apply a concept of self-reflection
 3. Make sound judgment concerning career
 4. Communicate a vision

The final checkpoint is the phase of assessment, which requires actual presentation, electronically and physically, of the total portfolio product: graduation. It is suggested that graduation occur only after successful completion of the portfolio.

- Checkpoint IV: Graduation—presentation of the professional portfolio.
 1. Evidence of university/college/departmental/program outcomes
 2. Evidence of leadership in the field
 3. Evidence of professional experience
 4. Evidence of preparation for the job market

At BGSU, several portfolio initiatives to integrate portfolio methodology are underway including the offering of a professional portfolio course, the establishment of an Electronic Portfolio Information Center at the university level (<http://folios.bgsu.edu/epic>), program-specific and online portfolios, and teacher training in portfolio methodology.

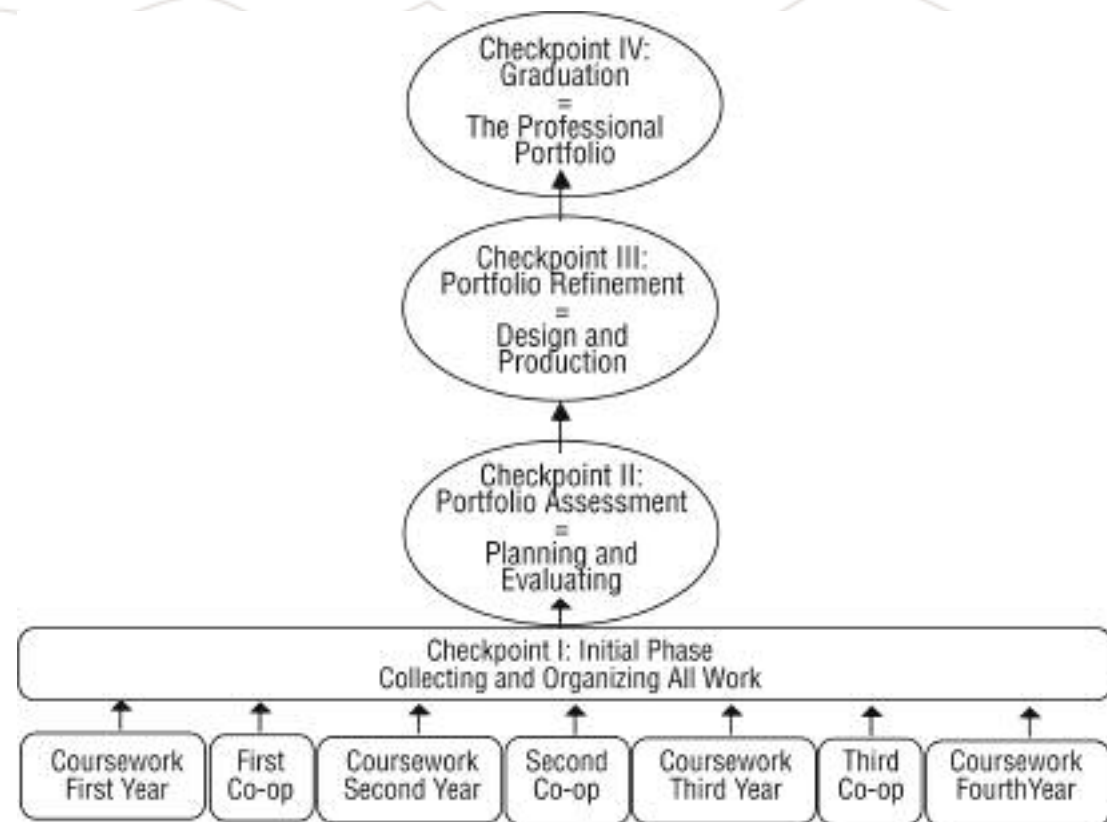


Figure 1. Conceptual layout of a portfolio system-process for undergraduate students.

In practical terms, one example is a professional portfolio course currently offered at BGSU. *Professional Portfolio*, initiated in 2000, lends credibility to proponents of core courses in professional curricula. This course is designed around the premise of a coalescence of experiences and coursework. Portfolios developed by students working independently and in teams reflect the interdisciplinary assessment function in robust and obvious ways related to the curriculum and professional preparation.

Not only can a portfolio course be used as an introductory vehicle for structuring various experiences, but various courses in the curriculum can also be used to integrate and build the portfolio along the way. In other words, the portfolio as a methodology is a means by which institutions or individual instructors measure their success at attaining the goals set forth for their students in the classroom. A key component of course design in this case is the identification of core values as reflected in learning outcomes. Five learning outcomes constitute broad BGSU core values: analysis, integration, communication, interaction, and disciplinary

knowledge. Each graduate will also have multiple professional imprints unique to the College of Technology that include technological problem solving, pragmatic field insight, application capability in research and development, cultural global perspective, and skill in the communication of concepts and ideas.

At the university level, portfolio techniques such as assessment, organizing information, and developmental progress are being tested for traditional freshman transition courses as part of the matriculation process. Along with other basic study skills, students learn how to evaluate what they are learning and how they are learning. The university learning outcomes offer the basis for transforming educational practices from teaching-centered coursework to active learning.

Students are taught to identify for themselves examples of various learning outcomes (e.g., critical thinking, writing skills, presentation skills, leadership, and making connections). In addition to examining the process by which they are learning, students also learn to identify examples of their own “best work.” Samples

that demonstrate both their abilities in the learning process and their abilities in their area of study are added to their portfolio. The process will help students to develop and judge their progress toward their own educational and career goals.

Examples from one such professional curriculum, Quality Systems, can be reviewed at www.bgsu.edu/colleges/technology/qs. This site is designed to demonstrate and explore how a faculty Web site portfolio can be integrated into the broader learning community. At the site, go to *Teaching* and then prompt *Student Work Examples* to see various portfolios in process. Prompting *Example Courseware* will also provide insights into one interpretation of how to help guide the portfolio development process electronically.

The five learning outcomes and the college’s “imprints” are all reinforced in various ways in the professional curriculum, upheld as adding important value to the total undergraduate experience. The foundational learning outcomes are intentionally reflected as core values in the professional curriculum, noted specifically as elements sought after and reflected via core knowledge. Assessing these outcomes through the portfolio is designed to assure that the learner makes steady progress. Outcomes are assessed through a combination of courses, professional experiences and certification, and incremental preparation of a portfolio which ties it all together.

Teaching portfolios are performance-based assessment tools that promote quality teaching at the college level. When used effectively, teaching portfolios can enhance focus and refinement of classroom teaching. As an example, teaching portfolios could be used to assess the outcome of team-based project planning, analysis, and execution. This outcome is assessed through completion and review of classroom performance requirements and core courses. The end result is a continuously built, cumulative portfolio to reflect projects planned, designed, and executed by the learner, either in a team or individual atmosphere. Periodic reviews of the evolving portfolio in core courses and through a final presentation to faculty and professionals in the field will occur via ongoing electronic postings and traditional presentations,

documenting learner growth and professional preparation in various courses and experiences.

Monitoring participation in student organizations assesses the outcome of professional and leadership skills certified. Student membership is suggested, along with successful completion of various professional certification exams. Additional professional portfolio items could include presentation materials or experiences from a professional conference.

Although not new, portfolios have recently enjoyed revitalization due to cultural changes identified in this article. This may be true not only for students in technical areas, but also for students in any discipline. Portfolios, particularly those created electronically, will provide many challenges and opportunities to academia.

Portfolios are equally important as students prepare for various professions, allowing all growth and accomplishments to be identified and assessed in a context well beyond traditional classrooms. Portfolios allow identification of areas of weakness in academic curricula as well as ways for faculty to assess their own effectiveness in the classroom. Institutions are also beginning to use portfolios as a means of assessing their success at meeting institutional goals.

We have just begun to tap the surface of the potential uses of portfolios. The future may see a completely new system of assessment in institutions of higher learning. Students would no longer earn grades in individual courses; rather, a portfolio could be begun as a freshman and modified and refined over time. Upon achievement of a certain level of excellence, the portfolio would be approved and a degree awarded.

Dr. Andreas Luescher is an assistant professor of Architecture/Environmental Design Studies in the College of Technology at Bowling Green State University, Bowling Green, Ohio.

Dr. Sinn is a professor of Technology Systems and director of the Center for Quality, Measurement, and Automation in the College of Technology at Bowling Green State University, Bowling Green, Ohio. He is member of Alpha Gamma Chapter of Epsilon Pi Tau and received his Distinguished Service Citation in 2002.

References

- Berryman, G. (1991). *Designing creative resumes*. Los Altos, CA: Crisp.
- Berryman, G. (1994). *Designing creative portfolios*. Los Altos, CA: Crisp.
- Cambridge, B. L., Kahn, S., Tompkins, D. P., & Yancey, K. B. (Eds.). (2001). *Electronic portfolios: Emerging practices in student, faculty, and institutional learning*. Washington, DC: American Association for Higher Education.
- Campbell, D. M., & Others. (2000). *Portfolio and performance assessment in teacher education*. Boston: Allyn & Bacon.
- Campbell, M. R., & Brummett, V. M. (2002, November). Professional teaching portfolios: For pros and preservice teachers alike. *Music Educators Journal*, 2(89), 25-30, 57.
- Costantino, P. M., & De Lorenzo, M. N. (2002). *Developing a professional teaching portfolio: A guide for success*. Boston: Allyn & Bacon.
- Gardner, H. (1993). *Multiple intelligences: The theory in practice*. New York: Basic Books.
- Goffman, E. (1990). *The presentation of self in everyday life*. New York: Doubleday. (Original work published 1959)
- Kliment, S. A. (1998). *Writing for design professionals*. New York: Norton.
- Kimeldorf, M. (1997). *Portfolio power*. Princeton, NJ: Peterson's.
- Linton, H. (1996). *Portfolio design*. New York: Norton.
- Marquand, E. (1985). *How to prepare your portfolio*. New York: Art Direction.
- Porter, T. (2000). *Selling architectural ideas*. New York: Routledge.
- Sanders, M. E. (2000). Web-based portfolios for technology education: A personal case study. *The Journal of Technology Studies*, 26(1), 11-18.
- Scher, P. (1992). *The graphic design portfolio: How to make a good one*. New York: Waston-Guptill.
- Seguin, M. (1991). *The perfect portfolio*. Hawthorne, NJ: The Career Press.
- Syre, T. R., & Pesa, J. A. (2001). Teaching portfolios: Suggested contents. *College Student Journal*, 2(35), 163-165.

