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EMERGING TRENDS AND KEY DEBATES IN UNDERGRADUATE EDUCATION

E-Portfolios For Reflection, Learning, and Assessment



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Recently, e-portfolios have become one of the most discussed innovations in higher education, even though the pedagogy has been around since the 1990s. I say “pedagogy” because, as the articles in this issue of *Peer Review* demonstrate, the real educational benefits of e-portfolios come from a set of pedagogical practices, not the technological platform itself. Across the country, e-portfolio initiatives are emerging on a range of campuses as digital communication becomes more commonplace in the lives of students, faculty, and institutions. This issue of *Peer Review* illustrates the multiple ways in which e-portfolios are being used on campus to enhance student success, as well as the evidence of e-portfolios’ positive effect on student learning.

Here are my own answers to some common questions posed about e-portfolios.

Why should higher education in general, or any of us in particular, pay attention to e-portfolios?

E-portfolios are technological tools that serve *students, faculty, and institutions* in multiple ways. *Faculty* can frame the contents and organization of e-portfolios to include course, program, and institutional learning outcomes, as well as the types and quantity of artifacts students include to demonstrate their learning toward those outcomes. *Students* can show their best work, including multiple drafts of their work as they develop and explore their learning as they work toward a final product demonstrating their achievement. *Programs and institutions* can have authentic evidence and examples of the level of learning demonstrated by their students for use in efforts to improve achievement and demonstrate accountability. The technology allows for capturing learning wherever it occurs (classroom, cocurriculum, community), in whatever mode it occurs (written, visual, graphic, oral, pictorial), and over time and space (single course, whole program, among and across multiple institutions).

What about the increased workload for faculty and students?

Initially, as with any new pedagogy, e-portfolios require time to learn. The great thing about e-portfolios is that the more an e-portfolio is owned by a student, the more valuable its content and processes become. Students do most of the work of constructing and maintaining their portfolios. E-portfolios can be presented as a medium for students to demonstrate learning that is valued by faculty and

achieved through coursework and the cocurriculum, and that is relevant to career and graduate school readiness. Unless student learning through e-portfolios is integrated into the daily practices of an institution, it will remain a less effective strategy and be perceived as an add-on in student and faculty minds. The more an e-portfolio is part of the curriculum across courses and programs, the less work it becomes for faculty; it simply replaces current work with reconceptualized assignments and evaluations.

What have we learned about e-portfolios? What is the case for adopting an e-portfolio approach to learning?

This publication reveals emerging evidence from across higher education on the positive impact of e-portfolios on student learning. E-portfolios are an especially strong pedagogy for the increasing numbers of first-generation, second language, and traditionally underserved students coming to higher education—students who are sometimes less well prepared than traditional students. E-portfolio use appears to enhance retention and graduation. E-portfolios are associated with more student success with transfer from institution to institution. E-portfolios seem to be most effective when peer and faculty feedback through the e-portfolio is regular and focused. Requiring students to reflect on their own learning seems to equip students to internalize and integrate their learning in new ways that strengthen the whole learning process, connecting it to the various aspects of the students’ lived experiences beyond the classroom. In sum, many of the issues and criticisms facing higher education today can be ameliorated through embedding e-portfolios in the formal and informal experience of students as they move through their educational pathways.

The Association of American Colleges and Universities (AAC&U) has argued through its centennial LEAP initiative (Liberal Education and America’s Promise) that e-portfolios are one of the best technologies available to institutions of higher education and their students, as they seek the opportunities to resist the atomization and privatization of education in favor of more integrative and meaningful forms of liberal education—the forms of education that faculty and employers have repeatedly claimed are essential for success in college, the economy, and civic life. The articles in this issue of *Peer Review* help to illuminate at the difference e-portfolios already are making.

—TERREL RHODES



E-Portfolios: A Look at Where We've Been, Where We Are Now, and Where We're (Possibly) Going

► **Susan Kahn**, director, Office of Institutional Effectiveness, and director, IUPUI ePortfolio Initiative, Indiana University–Purdue University Indianapolis

The word on e-portfolios is out in higher education. According to the 2013 survey from the EDUCAUSE Center for Analysis and Research (ECAR), use of e-portfolios has increased sharply since 2010, when the survey first asked about them: 57 percent of US postsecondary institutions say they have made some use of e-portfolios in the past year, and 53 percent of responding students report engaging with e-portfolios in at least one course in the past year (Dahlstrom, Walker, and Dziuban 2013). The continuing proliferation of vendors and products attests to a growing market for e-portfolio platforms. From my own experience directing a campus-level e-portfolio initiative, I know that, increasingly, faculty members, advisors, student life professionals, and career services staff are hearing about e-portfolios through their own disciplinary and professional venues and bringing ideas about them back to their campuses.

A growing body of e-portfolio research and resources is supporting this surge of e-portfolio engagement, including a relatively new international professional organization founded in 2009, the Association for Authentic, Experiential, and Evidence-Based Learning (AAEEBL), which offers annual international conferences and regional gatherings in the United States and Canada, and the *International Journal of ePortfolio (IJeP)*, founded 2011, which provides e-portfolio researchers and practitioners an online and print outlet for disseminating their work. These developments follow several prominent national and international networks and projects that, beginning in the early and mid-2000s, have fostered the growth of a community of e-portfolio users and contributed to our understanding of effective e-portfolio practices. These include, among others, AAC&U's VALUE project, the Inter/

National Coalition for Electronic Portfolio Research, the Electronic Portfolio Action and Communication group (known as EPAC), the Making Connections National Resource Center at LaGuardia Community College in New York, and that center's current project, Connect to Learning.

E-PORTFOLIOS, YESTERDAY AND TODAY

Where is all this interest and activity coming from? E-portfolios represent a convergence of several ideas and practices that have developed within higher education over the past few decades. They are, of course, direct descendants of reflective print portfolios, which have had a long history in college-level writing programs and teacher education programs and had already begun attracting interest from other disciplines by the late 1980s and early 1990s (Batson 2002; Yancey 2001). These print portfolios were meant to cultivate habits of metacognition, reflective practice, and self-critique among students and, in some cases, to demonstrate student achievement of defined learning outcomes. The advent of the web in the 1990s and the subsequent development and increasing penetration of learning management systems accelerated the migration of student work into digital formats. At the same time, the growing influence of the assessment movement, particularly increased demands from accrediting associations and state and federal governments for direct evidence of student learning, has served as another catalyst for e-portfolio development and deployment, especially in disciplines subject to specialized accreditation. Here, the ability of e-portfolios to capture work representing authentic performances in multiple digital media—like a video clip of a candidate for teacher licensure teaching a lesson—offers a clear advantage over more traditional forms of assessment.



Today, some researchers (e.g., Barrett 2010; Matthews-DeNatale 2014) point to distinct types of e-portfolios—learning, assessment, and career showcase portfolios, for instance—while others argue that a given portfolio may serve multiple aims simultaneously (e.g., Cambridge 2010). Whichever view one holds, it seems clear that increasing adoption of e-portfolios is driven in part by the range of educational purposes and priorities they can serve, as illustrated by the variety of practices featured in this issue of *Peer Review*. Eynon, Gambino, and Torok’s piece, in particular, points to emerging research that demonstrates the multifaceted benefits for students of well-conceived, well-executed e-portfolio programs: improved achievement, retention, and graduation; deeper engagement and learning; and enhanced capacities to think integratively across learning experiences and disciplinary boundaries.

Those of us who have had the opportunity to teach and refine our practices with e-portfolios over a period of time have also seen firsthand that thoughtfully conceived and guided e-portfolio development can catalyze new learning, actively engaging students in making sense and meaning of their learning experiences so that they approach these experiences with a greater sense of purposefulness, agency, and accomplishment. We have seen how, as students use hypermedia to compose representations of self for various audiences on an e-portfolio site, they construct and integrate academic, professional, and personal identities. E-portfolio artifacts and reflections yield a rich trove of multimodal information on what students are learning and how they are experiencing our curricula, programs, and institutions. This rich information supports both accountability for and improvement of learning, and enables assessment of more nuanced and complex abilities and outcomes like critical thinking, integrative learning, and ethical reasoning.

In a larger sense, e-portfolios also embrace several ideas that have been central to the higher education innovation

and reform movement that has taken shape over the past generation: a constructivist epistemology that puts students at the center of building knowledge and meaning, urging instructors off the podium and turning them into intellectual mentors and guides; high-impact practices that take students out of the classroom and into contexts that ask them to transfer and apply knowledge; and active, social pedagogies in which students create, integrate, and apply knowledge together. Research emerging from both institution-based and multi-institution initiatives is demonstrating how well-scaffolded e-portfolios can serve as

The ability of e-portfolios to capture work representing authentic performances in multiple digital media—like a video clip of a candidate for teacher licensure teaching a lesson—offers a clear advantage over more traditional forms of assessment

virtual sites for students to purposefully carry out and represent these activities. (To find examples, see the articles in this issue of *Peer Review* or glance at the table of contents for any issue of *IJeP*.) More purposeful and self-aware learning in college in turn prepares students for purposeful lifelong learning—another theme of the calls for higher education improvement and reform.

For those of us who are e-portfolio proponents, not all of the news has been good. While the ECAR survey cited at the beginning of this essay points to accelerating adoption of e-portfolios, it also finds that that adoption is spotty: only a quarter of students reporting engagement with e-portfolios over the past year said that they had used the portfolio in more than half of their courses, and the great majority of institutions reporting e-portfolio adoption characterized this adoption as “sparse.”

These findings are not surprising. E-portfolios represent a shift from the “teaching paradigm” to the “learning paradigm,” in Barr and Tagg’s terminology (1995), and paradigm shifts don’t occur easily or painlessly in higher education (or anywhere else). Darren Cambridge makes a similar point when he observes that e-portfolios “touch everything; virtually every obstacle to improving teaching and learning in higher education is also an obstacle to using e-portfolios well” (Cambridge 2010). The ideas and ideals that have animated the e-portfolio movement can engender resistance. In other cases, new e-portfolio

initiatives have underestimated the magnitude and implications of change e-portfolios represent—expecting them to be “plug and play,” for example, rather than understanding that, like any other new pedagogy, assessment approach, or technology, an e-portfolio will require successive iterations to “get it right.”

Campuses just beginning to work with e-portfolios today can avoid such common pitfalls by taking advantage of the wealth of recently developed resources. AAEEBL conferences and regional meetings, *IJeP*, and AAC&U’s annual E-Portfolio Forum, among others, offer information, models of successful course, program, and campus implementation, and examples of effective e-portfolio practices. The VALUE rubrics have been adopted or adapted by programs and campuses across the country and offer a foundation for both valid and reliable e-portfolio assessment. The Catalyst for



Learning model and website developed by the Connect to Learning project address the various challenges that new and continuing e-portfolio initiatives must negotiate and provide exemplars of and advice on support systems and strategies for developing and sustaining successful e-portfolio programs.

ON THE BRINK OF AN ERA

In light of the rapid spread of e-portfolio adoption and dissemination described above, where do e-portfolios—as a field of research and practice in higher education—stand today? I believe that we are on the brink of an era of expanded adoption and impact of e-portfolios. The 2013 ECAR survey and other studies show clearly that e-portfolio use is increasing. The founding and flourishing of AAEEBL, *IJeP*, and the Inter/National Coalition for Electronic Portfolio Research and the visibility and influence of national initiatives like the VALUE project and Connect to Learning signal that e-portfolios have emerged as a professional field. Growing numbers of proposals for presentations at AAEEBL conferences, AAC&U's E-Portfolio Forum, and e-portfolio tracks at AAC&U meetings and IUPUI's national Assessment Institute offer us another indication of accelerating interest, recognition, and adoption. As Gail Matthews DeNatale of Northeastern University notes in an upcoming article, we have “reached a tipping point in the recognition and support for e-portfolios” (Matthews-DeNatale 2014).

By now, colleges and universities as diverse as Spelman College, Portland State University, and the Virginia Military Institute have successfully adopted and maintained campus-wide general education e-portfolio initiatives that serve a range of purposes. Notable success stories have emerged from the community college sector—LaGuardia Community College comes to mind here, of course, but so do Salt Lake Community College, Tunxis Community College, and others. While

campus-wide e-portfolio programs may not become the norm at large research campuses, where consensus on common approaches is more difficult to achieve, the ECAR survey shows that program-level initiatives are on the rise at these institutions, and, to the extent that these projects are thoughtfully implemented and sustained, students will benefit from a more intentionally reflective and integrative approach to learning—and programs will have rich repositories of evidence for assessment and improvement.



NEXT STEPS

What's next? How can we more fully exploit the capabilities of e-portfolios to deepen student learning and engagement and to inform and enrich our assessment practices and findings? First, we need to take advantage of existing resources, some of which are freely available online, including the many e-portfolio galleries featured on college and university websites. (For two excellent and informative examples, see the LaGuardia Community College ePortfolio Gallery and the Virginia Tech ePortfolio Gallery.) An increasing amount of this information is situated within specific contexts and disciplines— notably first-year experiences,

capstones, general education, service learning, various health care disciplines, and teacher education—and may alleviate the need for new e-portfolio initiatives in these areas to wholly “reinvent the wheel.” Substantial additions to existing resources are emerging from the Connect to Learning project, the Inter/National Coalition for Electronic Portfolio Research (I/NCEPR), *IJeP*, and the AAC&U E-Portfolio Forum, which has been highlighting new research for the past two years. In my own experience, I have been surprised and impressed by the power of team attendance at AAEEBL Conferences and participation in multi-campus collaborative initiatives—including two cohorts of the I/NCEPR, Connect to Learning, and the VALUE project—to enrich and accelerate the maturation of local practices.

We also need more empirical research on effective e-portfolio practices and on the impact of these practices on student learning. In a recent review of the e-portfolio literature that appeared in *IJeP*, Bryant and Chittum found that, over the past three years, “e-portfolio research is increasingly evident in the literature,” and that this research is moving from a focus on “descriptions of practice and theoretical arguments to a focus on data collection and presentation” (2013). These authors credit the advent of *IJeP* itself as a key driver of this encouraging trend. At the same time, they call for more research that incorporates “empirical assessment of [e-portfolios’] impact on student outcomes,” particularly in the areas of “integration of knowledge and metacognitive awareness.” Similarly, Matthews-DeNatale identifies a need for more research on “design and impact.”

I would add two possible avenues of inquiry to those identified by Matthews-DeNatale and Bryant and Chittum:

- Research on assessment of work in multiple digital media. E-portfolios offer students an array of new pos-



sibilities for representing their learning experiences. On my campus, I have found that instructors and evaluators recognize that such multimodal work offers new kinds of information about student learning, but lack established methods and rubrics for assessing this work, particularly in fields that have relied traditionally on written media. The Inter/National Coalition for Electronic Research has begun to address this issue, but more research and discipline-specific exemplars are needed. A related question is whether multimodal e-portfolio development has an impact on student learning and, if so, what that impact is. For example, is greater multimodality associated with increased integrative learning, problem-solving, or creative capacities?

- Investigation of e-portfolios as a meta-high-impact practice. Randy Bass has noted that “one essential quality that makes high-impact practices high impact ... is that they help students find a sense of purpose in their learning,” and that integrative social pedagogies, including e-portfolios, help students “find new meaning in their learning—by connecting and reframing” (personal communication). What happens when we combine e-portfolios with demonstrated high-impact practices like first-year experiences, service learning, or study abroad? Can we approach e-portfolios, as my Indiana University–Purdue University Indianapolis colleague Susan Scott has suggested (Kahn and Scott 2013), as a meta-high-impact practice? Under what circumstances and in what contexts can e-portfolios most effectively expand the impact of high-impact practices?

In today’s rapidly shifting higher education landscape, we cannot, of course, predict what the future holds for e-portfolios. Decades of debate about the relative merits of standardized tests and authentic assess-

ment to evaluate the contributions of higher education to students’ development have not been resolved; old paradigms die hard; and we never know what new technology, innovation, or policy agenda may be around the corner. But e-portfolios have gained increasing traction, recognition, and influence among educators and students worldwide, and a knowledge base grounded in research is developing rapidly. We know that we have only just begun to tap the potential of e-portfolios to enhance learning and improve our programs and institutions. I look forward to seeing what happens next. ■

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Institute on General Education and Assessment

June 3–7, 2014
University of Vermont, Burlington

Institute on High-Impact Practices and Student Success

June 17–21, 2014
Vanderbilt University, Nashville

Institute on Integrative Learning and the Departments

July 9–13, 2014
California State University–Fullerton

PKAL Summer Leadership Institute for STEM Faculty

July 18–23, 2014
Pendle Hill, Wallingford, Pennsylvania

July 25–30, 2014
Baca Campus of Colorado College, Crestone, Colorado

NETWORK MEETINGS

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October 16–18, 2014
Minneapolis, Minnesota

Transforming STEM Education

November 6–8, 2014
Atlanta, Georgia

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Completion, Quality, and Change: The Difference E-Portfolios Make

► **Bret Eynon**, associate dean for academic affairs and executive director, Making Connections National Resource Center, LaGuardia Community College, CUNY

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Judit Török, co-director, Making Connections National Resource Center, LaGuardia Community College, CUNY

As higher education confronts a challenging new era, it is riven by two competing agendas. The completion agenda prioritizes rapid graduation, using new tools and structures to help students advance through higher education with greater speed and efficiency. Meanwhile, the quality agenda focuses on learning, prioritizing depth and understanding and helping students develop as complex thinkers. Preliminary findings from the Connect to Learning project (C2L) suggest that e-portfolio initiatives could play key roles in resolving this tension. The work of campus teams associated with C2L demonstrates that thoughtful e-portfolio practice can help build student success (as measured in “hard outcomes” such as retention and graduation) while also advancing reflection, integration, and “deep learning.”

WHAT IS C2L?

Connect to Learning is a FIPSE-funded community of practice, linking e-portfolio leadership teams from twenty-four campuses in a shared effort to learn from each other, document effective practices, and develop a resource for the field. Launched in 2011, C2L is coordinated by the Making Connections National Resource Center at LaGuardia Community College, the City University of New York (CUNY). C2L campuses, each of which sustains its own campus e-portfolio initiative, represent a diverse cross-section of higher education, from Boston University to San Francisco State University, Salt Lake Community College,

and CUNY’s newest campus, Stella and Charles Guttman Community College.

Over the past three years, C2L led a hybrid professional development process, linking campus practice, annual face-to-face meetings, and online exchange. Each campus team built a portfolio to represent its practices and its campus e-portfolio story. In monthly online discussions the teams explored practices shared in the portfolios. This scaffolded process, detailed in *To Improve the Academy* (Eynon, Gambino, and Torok 2013), helped teams deepen their best work.

C2L has collected members’ campus practices in a resource website called Catalyst for Learning: ePortfolio Research and Resources (<http://c2l.mcnrc.org>). Made public in early 2014, this groundbreaking site links campus e-portfolios into a searchable database. It also offers analytical essays, multimedia presentations, student portfolios, and nearly 300 campus-tested practices (Catalyst 2014).

As we gathered resources for the Catalyst site, the C2L network developed a theoretical framework, spotlighting characteristics of effective e-portfolio practice. The hypothesis emerging from our collective inquiry suggests that successful e-portfolio initiatives address multiple layers of campus activity, from classrooms to institutional policy. We found that effective campus teams built projects that spanned five interlocking sectors: *pedagogy*, *outcomes assessment*, *professional development*, *technology*, and *scaling up*. This framework (see fig. 1) informs the Catalyst site.

This article is adapted from the original Connect to Learn project field report, “What Difference Can e-Portfolio Make?” by Brett Eynon, Laura M. Gambino, and Judit Török, which is published in the April 2014 issue of the International Journal of e-Portfolio, volume 1. The original article can be found on the Catalyst for Learning ePortfolio Resources and Research website (<http://www.c2l.mcnrc.org>).



WHAT DOES IT TAKE TO MAKE A DIFFERENCE?

Pedagogy is the primary sector in the Catalyst framework of effective practice. C2L campus teams studied the research on reflection, particularly the work of Carol Rodgers, and applied it to e-portfolio practice. A Dewey scholar, Rodgers (2002) emphasizes systematic reflection to help students connect and make meaning from diverse learning experiences. At Virginia Tech, for example, students in a first-year learning community use e-portfolios to reflect on service-learning experiences, connecting them to classroom learning and deepening their goals as learners. Effective reflection, Rodgers suggests, helps students link academic learning to personal development. The Catalyst site showcases longitudinal practices; for example, at Three Rivers Community College, nursing students taking a set of six sequenced courses recursively reflect on the ethos and values of their profession, authoring their own identities as learners and emerging professionals.

E-portfolios are often treated as private, individual spaces. But C2L teams emphasized reflection in community. Linking Rogers' ideas to a white paper on "social pedagogy" by Randy Bass and Heidi

Elmendorf (2011), C2L teams developed ways to use e-portfolios for peer critique, collaboration, and exchange. The Catalyst site documents multiple examples of this practice, such as art history students at Indiana University-Purdue University Indianapolis (IUPUI) engaging in extensive peer review of each other's portfolios and Pace University biology students using e-portfolios to create collaborative resources for newer students.

While pedagogy is key to effective e-portfolio projects, C2L found outcomes assessment to be equally vital. Northeastern University, IUPUI, LaGuardia, Salt Lake Community College, and other C2L campuses documented ways they use e-portfolios to support programmatic and general education assessment. Salt Lake, for example, uses e-portfolios to collect thousands of student learning artifacts, which are read against rubrics based on AAC&U's VALUE rubrics to assess writing and other competencies. The Catalyst site offers rubrics, procedures, and multiple campus case studies.

Catalyst also documents campus practices related to other framework sectors: professional development, technology, and scaling up. To support reflective social

pedagogy, C2L campuses offer faculty workshops, institutes, and yearlong seminars. Teams shared approaches that worked well in their settings. They also shared criteria for effective e-portfolio technology and strategies for working with campus stakeholders, attracting funds, and building a campus e-portfolio culture.

Reviewing all sectors of the Catalyst framework, C2L found that three design principles informed campus practice: *inquiry, reflection and integration*. While shaping sophisticated

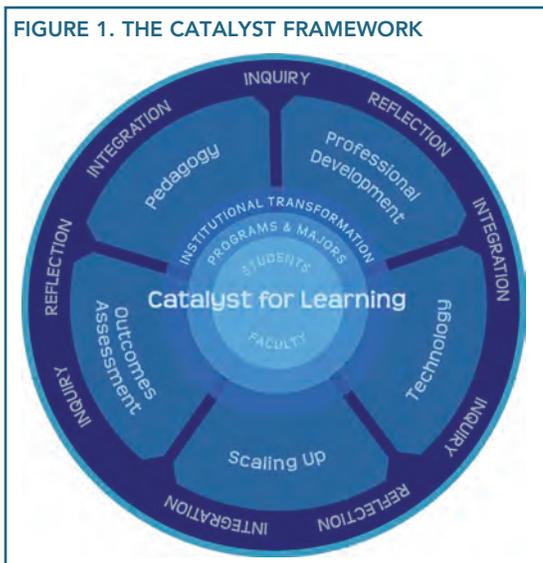
e-portfolio pedagogy, attention to these design principles also deepens the work of e-portfolio projects around professional development, outcomes assessment, technology, and scaling up. Across sectors, the most powerful uses of e-portfolios engage faculty, staff, and students in a systematic inquiry into learning. Building on inquiry and guided by reflection, students, faculty, and other stakeholders make connections that help them integrate and apply learning to individual and institutional plans. The Catalyst site offers essays that detail each principle.

WHAT DIFFERENCE CAN E-PORTFOLIO INITIATIVES MAKE?

The sectors and design principles of the Catalyst framework help identify and illustrate what it takes to build an effective campus e-portfolio initiative. There's an obvious companion question: is this effort worthwhile? What difference can e-portfolios make? In other words, what does the evidence from the C2L network tell us about the potential value of a sophisticated e-portfolio initiative?

Our working answer to this question can be grouped into three propositions: (1) e-portfolio initiatives advance student success; (2) making student learning visible—e-portfolio initiatives support reflection, social pedagogy, and deep learning; and (3) e-portfolio initiatives catalyze learning-centered institutional change. Evidence linked to the first and second propositions shows how e-portfolio projects can help campuses address both the completion and quality agendas. And the third proposition suggests how e-portfolio initiatives can advance what we call the *change agenda*—helping colleges become more adaptive learning organizations.

An important caveat: we recognize that the data from C2L campuses have significant limitations. Proving causal connections related to learning is always challenging. C2L campus teams lack the





ability to conduct randomized control group studies. The network spans diverse campus contexts, marked by differences in focus, purpose, and level of student preparation. The C2L data is limited in rigor and consistency, but it is nonetheless suggestive and intriguing.

Proposition 1: E-Portfolio Initiatives Advance Student Success

At a growing number of campuses with sustained e-portfolio initiatives, student e-portfolio usage correlates with higher levels of student success as measured by pass rates, GPA, and retention.

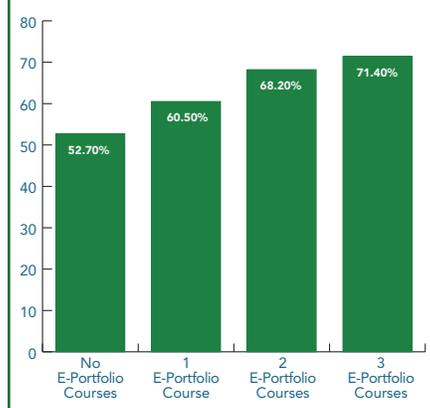
C2L campuses study the relationship of e-portfolio to student success. A constellation of these campuses can now present e-portfolio-related student success evidence such as retention rates and GPA data. For example:

- In the Douglass Women’s College of Rutgers University, e-portfolio use was introduced into a required first-semester “mission” course in 2008–2009; student performance improved significantly. The average grade point in the course for two semesters before e-portfolios were introduced (2007–8) was a B (3.213); in nine semesters using

e-portfolios (2009–2012), students earned an average of a B+ (3.508). Students’ GPAs across all of their courses improved as well. In 2007–8, before e-portfolio use, the average cumulative GPA was 2.933; in the nine semesters from 2009–12, average cumulative GPA has been 3.095.

- At LaGuardia Community College, data from the 2011–2012 school year showed that, across disciplines, the one-semester retention rate for students in e-portfolio courses in 2011–12 was 80.4 percent, versus 61.7 percent for students in comparison courses. Students enrolled in e-portfolio courses also had higher course completion (96.4 percent, +1.8 percentage points), course pass (79.7 percent, + 8.2 percentage points), and high pass rates—C and above—(77.7 percent, +9.9 percentage points) than students in comparison courses.
- At Queensborough Community College, all incoming students were enrolled in First-Year Academies beginning in 2009. Some course sections in the academies used e-portfolios, other course sections did not. All Academy sections in 2009-10 demonstrated significant improvement in pass rates and next semester retention, compared to college baselines (the 2006-7 academic year). However, the improvements in pass rates and retention in the e-portfolio-enhanced course sections were significantly greater (see table 1).
- At Tunxis Community College, a year-long comparison between e-portfolio and non-e-portfolio sections of developmental English

FIGURE 2. TUNXIS COMMUNITY COLLEGE (CT) NEXT SEMESTER RETENTION RATES BY NUMBER OF EXPOSURES



courses showed that e-portfolio sections had on average a 3.5 percent higher pass rate and an almost 6 percent higher retention rate. Meanwhile, data from across the college showed that students who had taken multiple courses with e-portfolios, from first year to capstone, were more likely to be retained than students who had fewer or no e-portfolio exposures (see fig. 2).

- San Francisco State University integrated e-portfolio use into the Metro Health Academy, a learning community for high-risk students. Data shows that retention and graduation rates for students in this e-portfolio-enhanced learning community are substantially higher than university-wide averages (see table 2).

As noted above, this data has limitations, and is not in any way conclusive. Yet it represents an emergent pattern and is similar to the types of data routinely used for decision making by state agencies and higher education institutions. As such, it provides a suggestive body of evidence for the proposition that sophisticated e-portfolio initiatives can demonstrate a correlation between e-portfolio usage and improved student success and help campuses meet the challenges of the completion agenda.

TABLE 1. QUEENSBOROUGH RETENTION DATA

QUEENSBOROUGH COMMUNITY COLLEGE		
Retention	Percent	Intervention
Fa 2006 Sp 2007 Retention	65%	Benchmark
Fa 2009 Sp 2010 Retention	88%	Freshman Academy
Fa 2009 Sp 2010 Retention	97.8%	FY Academies w/E-P

TABLE 2. METRO ACADEMY RETENTION DATA

SAN FRANCISCO STATE UNIVERSITY		
	Metro Academy, E-Portfolio First Year/First Time Students	All SFSU First Year/First Time Students
1 Yr Retention Rate	90.0%	79.3%
2 Yr Retention Rate	79.0%	60.0%
4 Yr Retention Rate	24.6%	14.9%



Other aspects of this data also are worth noting. One is that positive outcomes cross institutional type. Another is that, on many C2L campuses, e-portfolio is used with other high-impact practices (Kuh 2008), such as first-year experience programs, learning communities, and capstone courses. This supports an emergent proposition that powerful e-portfolio practice is inherently connective and integrative, and that part of what e-portfolio can do is link and enhance the value of other high-impact practices. In this sense, e-portfolio use could be understood as what IUPUI’s Susan Scott and Susan Kahn (2014) have described as a “meta-high-impact practice.”

Proposition 2: Making Student Learning Visible—E-Portfolio Initiatives Support Reflection, Social Pedagogy, and Deep Learning

Helping students reflect on and connect their learning across academic and cocurricular learning experiences, sophisticated e-portfolio practices transform the student learning experience. Advancing higher order thinking and integrative learning, the connective e-portfolio helps students construct purposeful identities as learners.

While positive student success data is important, it provides limited insight into the e-portfolio-enhanced student learning experience. For those with less experience with e-portfolios, it is easy to make a quick leap from such data to the assumption that implementing e-portfolios will automatically lead to improved student outcomes. Those with more experience know, however, that the value of e-portfolio practice for students depends in large measure on how it is implemented: the pedagogy and practices of faculty and staff as well as broader support structures, the kinds of practices discussed above and identified by the Catalyst framework.

Guided by the design principles of inquiry, reflection, and integration, e-portfolio pedagogy on C2L campuses focused

on helping students make connections across diverse learning experiences and consider the relevance of college learning to their personal lives. Does e-portfolio practice based on this pedagogy have an effect? To explore this question, C2L campuses have been surveying students, seeking insight into the ways students describe their e-portfolio experience. In 2011, C2L developed a C2L Core Student Survey; the findings from four semesters of student responses (n=9,542) have deepened our understanding of how e-portfolio use on C2L campuses affects the student learning experience.

The survey examines the ways e-portfolio experiences shaped student learning (see table 3). For example, students used a four-part scale to agree or disagree with the statement “Building my e-portfolio helped

me to make connections between ideas.” Seventy percent of respondents Agreed or Strongly Agreed with this statement. Similarly, 65.6 percent Agreed or Strongly Agreed that “Using an e-portfolio has allowed me to be more aware of my growth and development as a learner.” These and other survey data suggest the integrative e-portfolio experience helps students make connections and build a more holistic self-portrait, a way of understanding themselves as learners.

These e-portfolio-specific questions were flanked by questions drawn from the National Survey of Student Engagement (NSSE) (table 4). Asked how much their coursework “Contributed to your knowledge, skills, and personal development in understanding yourself,” 74.1 percent responded Quite a Bit or Very Much, rein-

TABLE 3. STUDENTS’ INTEGRATIVE E-PORTFOLIO EXPERIENCES

Selected C2L Core Survey Questions	Quite a Bit or Very Much
“Building my e-portfolio helped me to think more deeply about the content of this course.”	64.4%
“Building my e-portfolio helped me succeed as a student.”	68.5%
“Someday I’d like to use my e-portfolio to show what I’ve learned and what I can do to others, such potential employers or professors at another college.”	73.8%
“Using e-portfolio has allowed me to be more aware of my growth and development as a learner.”	69.3%
“Building my e-portfolio helped me to make connections between ideas.”	75.6%

n=6,729 students

TABLE 4. DEEP LEARNING QUESTIONS DRAWN FROM NSSE

Selected C2L Core Survey Questions	Quite a Bit or Very Much
“How much has your experience in this course contributed to your knowledge, skills, and personal development in writing clearly and effectively?”	77.7%
“How much has your experience in this course contributed to your knowledge, skills, and personal development in understanding yourself?”	78.6%
“How much has your work in this course emphasized applying theories or concepts to practical problems or in new situations?”	77.2%
“How much has your work in this course emphasized synthesizing and organizing ideas, information, or experiences in new ways?”	83.1%

n=6,729 students



forcing the idea that reflective e-portfolio experiences supported self-understanding. Student responses were also strong on questions related to integrative, higher order thinking, key elements in deep learning (Laird, Shoup, and Kuh 2005). When C2L students were asked how much their coursework contributed to engagement in “Synthesizing and organizing ideas, information, or experiences in new ways” the percentage responding Quite a Bit or Very Much was 78.4 percent.

The survey included open-ended questions asking students how the e-portfolio experience shaped their learning. The replies extend patterns revealed by the quantitative data:

- E-portfolio has supported my growth and learning because I was able to bring my ideas together. I learned that I have accomplished a lot throughout my college career.
- I got to show who I was. While creating my e-portfolio, I learned even more about myself.
- The best part was to be able to apply my own work into it... I love how it links to assignments that you have done... I also enjoy that I grew as a learner... It helped me connect between new ideas and old ones.

While not conclusive, the data suggests that reflective e-portfolio pedagogy helps students make meaning from specific learning experiences and connections to other experiences, within and beyond the course. Ultimately, students recursively connect their learning to consideration of goals and values, constructing a more intentional and purposeful sense of self.

C2L survey data also suggests that linking integrative reflection with social pedagogy—having an audience actually looking at the e-portfolios—enhances its value. The role of audience was explored from two perspectives—instructors and peers. Across four semesters, 75.4 percent of students who reported high levels

of instructor feedback also Agreed or Strongly Agreed with the statement “Using e-portfolio has allowed me to be more aware of my growth and development as a learner.” For students reporting low levels of instructor feedback, the comparable figure was 20.6 percent.

Similarly, a peer feedback scale was created by taking the mean of the responses to two comparable peer-related items, asking students whether other students had reviewed and given them feedback on their portfolios. Students who received high levels of peer feedback as part of their e-portfolio development were significantly more likely than students in the low peer feedback group to report high levels of integrative learning experience. For example, 85.4 percent of students who reported high levels of peer feedback Agreed or Strongly Agreed with the statement “Using e-portfolio has allowed me to be more aware of my growth and development as a learner.” The figure for students who received low levels of student feedback was 30.6 percent.

The pattern held true for all of the NSSE-based questions, including those associated with deep learning. When students know that peers are looking at and commenting on their e-portfolio, its value as a learning experience is significantly enhanced.

Qualitative data also highlighted the importance of social pedagogy to the portfolio experience. “E-portfolio has allowed me to receive feedback and criticism of my work from fellow classmates. I have learned where my weaknesses and strengths are as a designer,” commented one student. “The best part was seeing other students’ e-portfolios and getting to know them and their experiences,” noted a second. Wrote a third: “The best part of working with e-portfolio is that I can share this with people and they can see what I have done in school.”

This preliminary data analysis suggests that e-portfolio processes shaped by

integrative social pedagogies help students make connections and deepen their learning. Together with data indicating that e-portfolio use helps students understand themselves as learners, this suggests that e-portfolio experiences shaped by such pedagogies help students take ownership of their learning, building not only academic skills but also the affective understandings of self now seen as critical to student success. In this way, a sophisticated e-portfolio initiative can help campuses address the quality agenda without sacrificing outcomes related to completion.

Proposition 3: E-Portfolio Initiatives Catalyze Learning-Centered Institutional Change

Focusing attention on student learning and prompting connection and cooperation across departments and divisions, E-portfolio initiatives can catalyze campus cultural and structural change, helping the institution move toward becoming an adaptive learning organization.

While the completion and quality agendas are well known, a third agenda for higher education is perhaps equally important: the change agenda. How can colleges and universities build their capacity to respond and adapt to changing conditions and new possibilities? How can they thoughtfully engage faculty and staff expertise to advance institution-wide innovation, focused on student learning? How can they build a learning culture and become more integrated and adaptive learning organizations?

Addressing this challenging agenda, our third proposition is qualitatively different than the first two, more sweeping and difficult to assess. Our analysis here is at a formative stage. The evidence derives from stories and practices shared by C2L teams, who documented work in each sector of the Catalyst framework and described how it re-shaped campus structure and culture. This data does not



lend itself to hard and fast conclusions. But it is fascinating and meaningful, and even at this early phase it deserves broad consideration by the field.

To build a successful e-portfolio initiative, C2L teams develop reflective social pedagogies, manage new technologies, and lead professional development and outcomes assessment processes. They attend to a range of other tasks that build campus engagement and institutional support. This work is instrumentally important to the scaling up process. At the same time, by bringing together diverse campus constituencies for collaboration focused on student learning, it creates opportunities for deeper systemic change.

As they scale up, successful C2L campus teams require and facilitate cross-campus collaboration. Using e-portfolios and the inquiry–reflection–integration design principles to support outcomes assessment and broad processes of institutional self-examination, C2L projects prompt campus-wide conversations about student learning. The conversations required for e-portfolio success can help campuses address the change agenda—illuminating the holistic nature of student learning, sparking integrative structural change, and building campus-wide commitment to organizational learning.

Across the network, the work of C2L teams has helped to prompt rethinking and change, the growth of a variety of integrative structures and an emerging commitment to an ethos of learning. At Northeastern University, for example, C2L faculty in Education used e-portfolio to assess student learning, and decided to totally rewrite the curriculum of all of their courses to improve cohesion, articulation, and a higher degree of integrative learning (Matthews-DeNatale 2014). At Manhattanville College, the C2L team initiated an in-depth professional development program. The power of learning-centered inquiry drew faculty

support for a more sustained focus on integrative learning and teaching, which in turn generated administrative support. The college made a commitment to launch and support a new campus-wide center for teaching and learning that would be responsible for e-portfolio programs and broader pedagogical inquiry.

At San Francisco State, evidence demonstrating the success of the Metro Health Academies has prompted the university to rethink the ways it helps students enter college life. Beginning in fall 2013, an integrative, e-portfolio-based learning community approach is being expanded to serve as much as 40 percent of the incoming student population. The provost of Boston University recently highlighted the e-portfolio initiative of the College of General Studies as an assessment model for other colleges at the university. Similarly, the e-portfolio effort at Three Rivers Community College had been limited to nursing program, but that integrative approach is now expanding to new academic areas, linking other programs and general education.

Meanwhile, at LaGuardia, e-portfolios have long been used to advance the importance of integrative learning, addressing the whole student. In 2012, the college announced a sweeping institutional change effort reflecting a similar perspective, drawing on e-portfolio use as part of the process of aligning student affairs and academic affairs, rethinking advisement and rebuilding the first-year experience. An e-portfolio initiative's capacity to highlight holistic learning, support educational planning and identity development, and link curricular and cocurricular experiences can help create bridges between academic and student affairs.

Observing campus developments across our network, particularly those related to scaling-up processes, we see that the growth of an e-portfolio initiative both requires and spurs broader

changes in institutional culture and structure. While the C2L evidence is still preliminary, it suggests that sophisticated e-portfolio practice can promote learning-centered connection, making student learning visible to faculty and staff across institutional boundaries. Requiring and facilitating collaboration across disciplines and departments, e-portfolio initiatives can help to build learning cultures across traditional institutional silos. By supporting a richer view of learning, encouraging a learning-centered institutional conversation, and catalyzing broad institutional change in structure and culture, e-portfolios can help colleges become more integrated and adaptive learning organizations. ■

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All C2L campus practices, stories and data referenced in this article, unless otherwise cited have been published on the Catalyst website <http://c2l.mcnrc.org>.



Linking Advising and E-Portfolios for Engagement: Design, Evolution, Assessment, and University-Wide Implementation

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The University of Notre Dame (UND) is a private Catholic research university with approximately 8,000 undergraduate students. The First Year of Studies (FYS) serves as the official collegiate home for all of its incoming first-year students (approximately 2,000 per year). By the end of their second semester at the university, these students will select one of the university's undergraduate degree-granting colleges (arts and letters, business, engineering, and science) or the school of architecture as their academic home. All are assigned an academic advisor (a full-time member of the special professional faculty) who will facilitate their transition into university life. This process includes completing a first-year curriculum that develops their intellectual skills, allows them to explore within the university, and enables them to explore options for intended programs of study. Every student is required to attend at least two group guidance and two one-on-one advising sessions during this initial year. Over 98 percent of first-year students are typically retained for the sophomore year and over 96 percent graduate with their entering cohort.

As part of this effort to provide an integrative and holistic first-year experience, and in an effort to fold greater accountability into the process by which student advancement toward first-year learning goals could be assessed, FYS faculty began considering the use of electronic portfolios (e-portfolios) as a means of increasing student engagement and improving advisor-student interactions. During the 2012–2013 academic year, FYS designed a university-wide Advising ePortfolio Initiative and encouraged the entire first-year class to build and use the e-portfolio as a self-assessment tool.

The initiative had three goals. The first (at the university level) was to introduce students to e-portfolios, to give them a space to reflect on and document their learning, and to build a university-wide e-portfolio culture. The second (at the FYS level) was to improve the advising experience by helping students prepare in advance for advising meetings and to be more mindful in the making of academic decisions through pre-engagement, reflection, and planning. In addition, FYS faculty had the sense that e-portfolios would enhance their efforts to assess student growth by providing firsthand evidence of student reflection on learning. The third goal (at the student level) was to enhance student intellectual engagement by providing a tool that would help students make the most of the time and energy they invest in academic planning. Overall, the hope was to initiate a process of deep, sustained, and contemplative learning that could continue throughout the entirety of the undergraduate experience.

In spite of the fact that there was no formal requirement to use an advising e-portfolio during the launch year, when the pilot year ended more than 71 percent of the first-year students had voluntarily participated. At the conclusion of the 2012–2013 academic year, the FYS ePortfolio Assessment Committee designed a methodology based on first-year learning objectives that proved effective in collecting evidence of student engagement and successful progress toward the realization of FYS' learning objectives. Additionally, e-portfolio assessment outcomes offered clear indication of improvements needed both for first-year advising and the e-portfolio initiative. Because of strong institutional support and



the opportunity to sponsor e-portfolio pilot courses and related programs that helped in the design of an advising e-portfolio geared to address the needs of first-year students, the 2012–2013 launch was a tremendous success. It led to a far stronger second-year roll out that resulted in widespread e-portfolio adoption by academic units throughout the university.

DEFINITION AND DESIGN

Advising e-portfolios are teaching tools designed to assist students in improving their decision-making, goal-setting, and planning skills—capacities which are necessary in order for students to be actively engaged in managing their own learning. The e-portfolio also gives students the opportunity to begin collecting, organizing, and archiving multimedia evidence (i.e., papers, projects, pictures, videos, and reflections) of learning experiences (class, work, research, time abroad, and/or service). In brief, e-portfolios have the potential to assist students in becoming more intentional and active learners by helping them take ownership of their academic progress.

Ideally, advising e-portfolios can create both a foundation and a medium for advising sessions that will improve academic engagement as well as intellectual and personal development. FYS advisors used this tool to assist students in reaching these goals through directed reflective queries and advisors' responses to those queries. Pre-advising meeting questions and both mid-year and end-of-year reflection questions were designed to prompt students to think about and integrate their learning experiences, and to develop proficiencies in multiple disciplines. The questions were also designed to help students chart future plans based on strengths and interests, to strategically develop necessary skills, and to make informed and conscious decisions emerging from both an evolving sense of self and an awareness

of the complex university environment they inhabit.

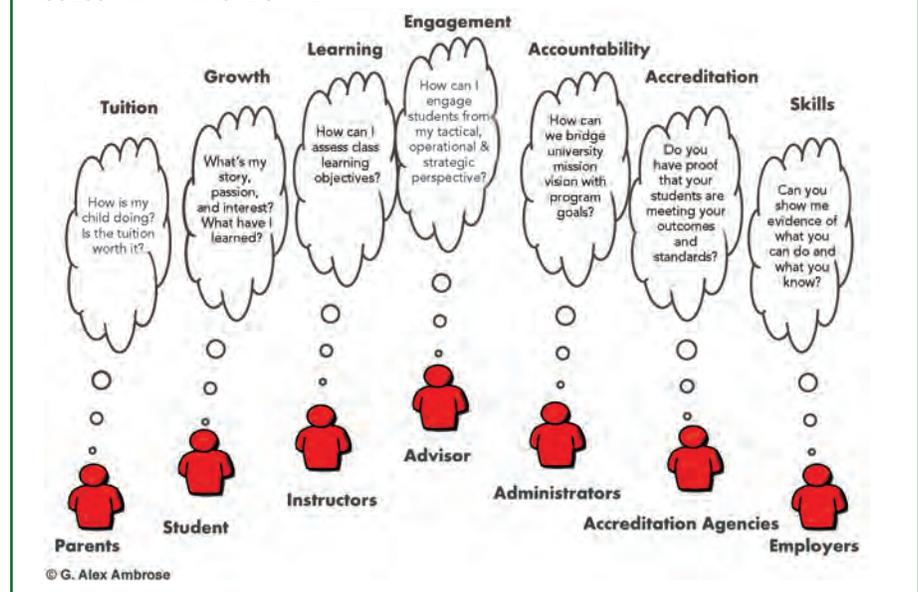
Advisors also played a crucial role in the assessment process because they are situated simultaneously at strategic, operational, and tactical levels. Figure 1 demonstrates how advisors are ideally situated to engage students and help them chronicle growth and achievement of program outcomes in a single class, across classes, outside of classes, and throughout their four years at an institution.

Trained peer advisors are also tremendously helpful in fostering student usage of e-portfolios. Peer advisors in FYS built their own e-portfolios (1) to help them reflect on their Notre Dame educational experience and prepare for their next phase in life, (2) to help model for first-year students how to claim personal ownership for their education through the use of an e-portfolio, (3) to help support advisors with the FYS Advising ePortfolio Initiative, and (4) to assist the university in the gathering of outcomes-based evidence for accreditation through the use of a skills matrix to document progress toward university learning outcomes over a four-year span.

The FYS e-portfolio assessment philosophy and design approach were created in conversation with the university's committee on e-portfolio use. The following principles were central to this philosophy:

- Student participation during the first year is strongly encouraged, but voluntary, which gave us *authentic assessment* data. Students were prompted and encouraged to do an e-portfolio, but no consequences were imposed for not doing one. In addition, the e-portfolio is student owned and controlled, and so they decide who may view it.
- The primary goal is to increase *student engagement* by using a *blended advising model* with e-portfolios. The term blended advising (Ambrose and Williamson-Ambrose 2013) represents the deliberate use of e-portfolios to flip the advising process by using the strengths of both face-to-face and online environments with synchronous and asynchronous technologies and interactions. By using technology in this way, this new paradigm of pre-engagement / engagement / re-engagement better aligns the advising process with

FIGURE 1. A BALANCED, TACTICAL, OPERATIONAL, AND STRATEGIC ASSESSMENT PERSPECTIVE





the developmental process of teaching and learning. Instead of transactional and surface-level interactions dealing with compliance, access, and paperwork, advisors and advisees have a space and a place for quality interaction to uncover, discuss, and develop both passions and purpose.

- Assessment can and should balance student and institutional needs for learning, and a student-centered e-portfolio can provide a *balanced solution* (Barrett 2007). If designed and implemented correctly, e-portfolios balance evaluation and learning, summative and formative feedback, past with the future, and a checklist of competencies with the holistic story of the learner's development.
- Learning outcomes should be *mapped and embedded*. Mapping e-portfolio artifacts to objectives at different levels means aligning evidence of the skills and outcomes that students achieve and document in their e-portfolios to class objectives, department/program objectives, college goals, institutional goals/outcomes, and national goals/standards (Kelly and Beers 2009). If evidence-based outcomes are mapped and e-portfolios are used for archiving, the nested assessment strategy model (Ambrose 2010) offers a framework for program administrators to strategically bridge issues of accreditation, accountability, and assessment in a balanced top-down (institutional-centered) and bottom-up (learner-centered) approach. If administrators create an e-portfolio culture, their program has the ability to link accreditation standards, institutional vision, program mission, curriculum competencies, course objectives, assignment outcomes, student performance, and learning.
- In the age of assessment and accountability, it is not enough to establish out-

comes and collect data to assess them. The assessment strategy needs to *close the assessment loop* and be a *continuous improvement process*.

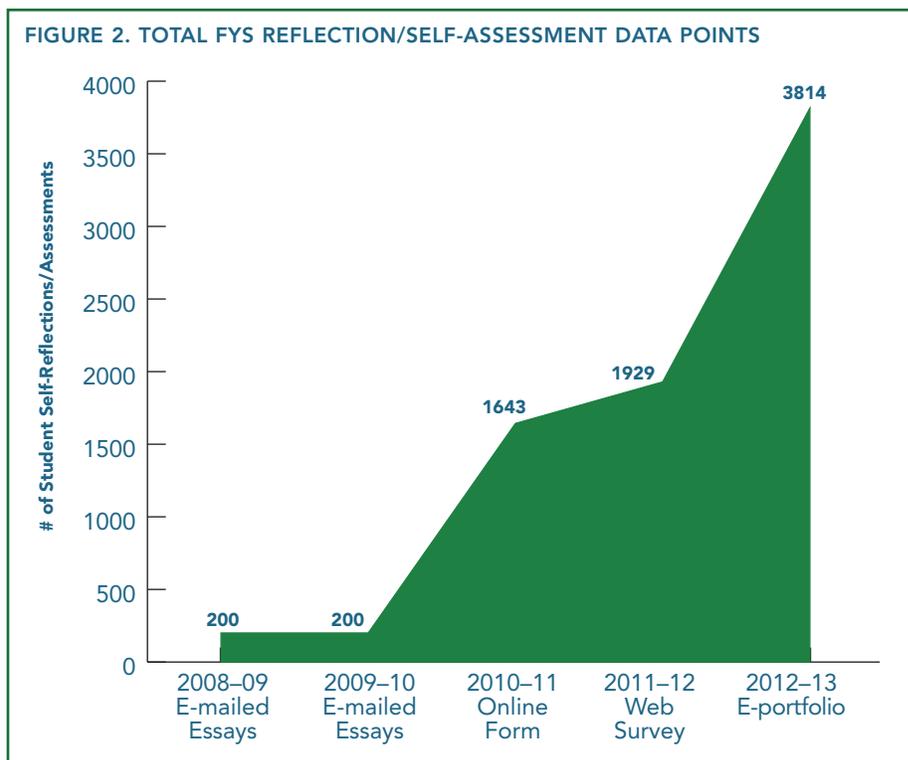
HISTORY AND EVOLUTION

FYS began to develop an advising e-portfolio initiative for all first-year students in the spring of 2010 by piloting a one-credit e-portfolio independent self-study using Google Sites. In this blended design seminar, a small group of undergraduates worked with the designers/instructors to build and test advising e-portfolios through face-to-face in-class workshops and online. In 2010–2012, these e-portfolio courses were modified so as to be available in open courseware format for those unable to take the one-credit seminar.

In the spring 2011, the provost's ad hoc committee on e-portfolios reached the conclusion that e-portfolios could play a strategic role in improving authentic assessment while also impacting student engagement and the advising process, as

long as they were primarily student-owned and controlled. By fall 2011, the university had contracted with an e-portfolio vendor. The provost's office embraced and commended this platform to the entirety of the university community by signing a contract that increased the scale of student accounts (by two thousand each year) until full student body access was attained. In addition, the provost's steering committee on e-portfolios created the Notre Dame ePortfolio Engagement Program (nDEEP) to oversee and ensure effective implementation of e-portfolios and their alignment to the nested assessment of course, program, college, and university outcomes. In sum, nDEEP's mission seeks to provide a platform, resources, and support to serve the needs of students, faculty, advisors, and programs in order to build a sustainable university-wide portfolio culture and community that supports authentic assessment, integrative learning, and deep engagement. (For more information see www.ePortfolio.nd.edu)

FIGURE 2. TOTAL FYS REFLECTION/SELF-ASSESSMENT DATA POINTS





IMPLEMENTATION AND ASSESSMENT

At the start of the 2012–13, the FYS dean and advising faculty challenged all incoming first-year students at orientation to build advising e-portfolios to improve their decision making, goal setting, planning, and reflection. This would begin the first university-wide implementation of the program. During this first-year rollout, student and advisor attention to e-portfolios varied from significant to minimal, but overall more than 71 percent of first-year students created e-portfolios and produced at least one reflection. Between pre-advising, mid-year, and end-of-year reflections, at least 3,820 first-year e-portfolio reflections were completed and submitted. Because of a usability glitch in “submitting” reflections during the first year, these numbers were lower than the actual number of student e-portfolio reflections completed. (Note: In a sampling test there was a 14 percent error rate of students who actually did complete, but did not submit, making the 71 percent participation rate a conservative estimate.) The e-portfolio vendor was aware of this problem and has already made changes to the user interface to simplify and improve the submission process.

FYS has been gathering reflection/self-assessment data since 2008. Figure 2 illustrates the increase in voluntary responses FYS had when shifting first from an e-mail reflection to an online survey form and then to the e-portfolio medium. What we learned from the process was that when protocols and platforms are designed for the student (archiving responses in their own e-portfolios rather than by filling in a generated form for their advisor’s use only), authenticity and student voluntary participation increased over the course of the semester.

If each reflection point took an average of fifteen minutes, then during its inaugural year advising e-portfolio use

resulted in 57,210 minutes or 953.5 hours of student time devoted to reflection, goal-setting, and self-assessment. In an age where student engagement has become the metric of quality in higher education, the e-portfolio has proven to be a valid means and medium for increasing the time and energy students invest in their education and personal development outside of class.

In order to structure its assessment of advising e-portfolios, the FYS’ ePortfolio Assessment Committee was formed with five academic advisors and one assistant dean. The university’s accreditation coordinator and its teaching and learning center director assisted in the general planning. Using Marsh’s (2007) assessment levels of meaning as a framework, the committee used the following process:

- *Methods to measure learning.* The advising e-portfolio assessment was treated as one qualitative method that supplemented a variety of other highly quantitative assessment measures. The assessment committee mapped and nested the FYS’s learning objectives onto the university’s learning outcomes. The committee then determined which learning outcomes could be authentically assessed through the e-portfolio reflection prompts.
- *The process of measuring and collecting information.* Students were asked to build and update their e-portfolios by answering self-assessment/reflective prompts that were mapped onto FYS learning outcomes. These assignments were submitted and archived in the ePortfolio Assessment Management System (AMS). A representative 3 percent random sample of student e-portfolios was generated.
- *The process of interpreting and evaluating performance data.* A rubric for the relevant learning outcomes was developed and each of the six reviewers scored twenty of the sixty student samples

so that each e-portfolio was blind reviewed twice. Reports were run and visualizations were created to analyze the data sets.

- *The process of making improvements based on the results of the data evaluated.* Reviewers rated, scored, and analyzed the sample of e-portfolios, noting trends and observations and then making recommendations for overall program improvement. In the spirit of continuous improvement and closing the assessment loop process, the committee collaboratively edited a Google Document to gather practical steps for improvement. The total assessment strategy is summarized in figure 3.

RIPPLE EFFECTS AND NEXT STEPS

FYS e-portfolio assessment methodology provides one of the most substantial and well-documented examples of how UND is using the e-portfolio to develop a next-generation assessment strategy, philosophy, process, and platform supportive of continuous improvement for teaching and learning programs. Improvements for the second year included fewer assignments and a simplified e-portfolio template. Given the proven usefulness of the many exercises and resources found on the advising e-portfolio’s resource pages, the next steps will include discovering ways to encourage students to more fully use those resources, perhaps through credit-bearing and noncredit courses in blended, MOOC, and open courseware formats that focus on various topics such as cultural competency, career planning, and communication.

Since FYS advisors did the heavy lifting in orienting the first-year university cohort to e-portfolio technology and thinking, other academic units had abundant opportunities to follow its lead. Three of the five undergraduate degree-granting colleges have established sophomore-level college-wide advising e-portfolio initiatives to



continue the momentum. At this point, there are eight additional program-level initiatives, at both undergraduate and graduate levels. In addition, strategic partnerships have been made with the alumni, study abroad, and career services offices. From spring 2012 to present (November 2013) more than 5,290 students (more than half of the undergraduate student population on campus) and 232 faculty, advisors, and staff have generated in excess of 9,528 e-portfolios.

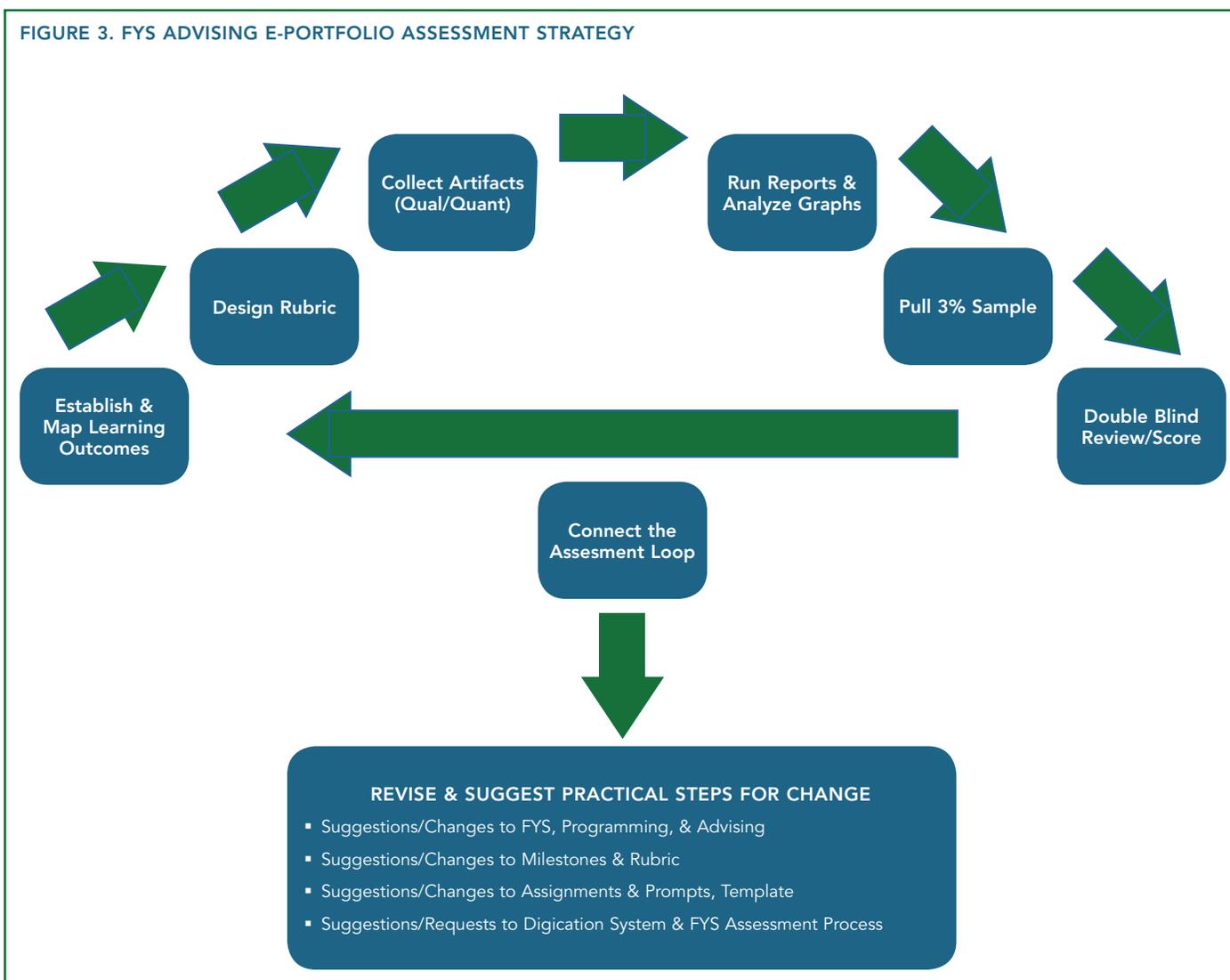
This advising e-portfolio initiative is enabling us to explore the assessment of advising outcomes as a distinct stream of

research within the scholarship of teaching and advising. Through the use of multi-layered assessment data, progress toward learning outcomes can be measured more effectively. These data, and the scholarly investigations emerging therefrom, promise to yield a growing body of best practices for advising, teaching, and learning. Several grants are now funding ongoing research at UND that seeks to mine e-portfolios, quantitatively and qualitatively, with data and model learning analytics that have the potential significantly to improve student retention and engagement in the STEM fields. ■

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FIGURE 3. FYS ADVISING E-PORTFOLIO ASSESSMENT STRATEGY





Reflection Builds Twenty-First-Century Professionals

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Powerful educational experiences arouse interest and curiosity, encourage reflection, and promote learning and growth in people. To this end, educational reformer John Dewey suggests that activity with purposeful reflection in private, public, and in groups supports learning as a “moving force” toward positive change. Using e-portfolios, the Three Rivers Community College (TRCC) nursing program designed scaffolded reflective learning activities that link program learning outcomes with TRCC’s general education core values. Our e-portfolio practices guide students as they integrate the skills and dispositions of critical thinking, safe and competent practice, communication, caring, holism, and professionalism into their development as twenty-first-century professionals.

The opportunity to fully integrate e-portfolio use across our professional degree program offers far-reaching benefits for students, faculty, and our entire college. Weaving a series of reflective e-portfolio assignments into every course in our major, we seek to create a recursive learning sequence, one that gradually deepens students’ identities as successful learners and emerging nursing professionals. That same sequential integration also facilitates faculty learning in our programmatic outcomes assessment process; our e-portfolio-based assessment strategy links general education core values and program competencies and helps our faculty better understand what aspects of our curriculum are working well and what aspects need to be rethought. This active process of inquiry and reflection engages faculty, just as it engages students, and sup-

ports learning for both. And this year, the success of this process in nursing has encouraged the college as a whole to advance a similar process for general education and outcome assessment college-wide.

BACKGROUND

Located in Norwich, Connecticut, TRCC is a midsize commuter college with forty-eight academic degrees and forty-four certificate programs. Educational clusters focus on allied health, advanced manufacturing, energy, hospitality, and information technology. The associate degree (AD) registered nursing (RN) program is one of six nursing programs in Connecticut. Approximately one hundred students are admitted to the program each year. While completing the four semesters of nursing, students have the opportunity to take liberal arts courses towards BSN degrees. TRCC is the only AD RN program in Southeastern Connecticut producing nurses consistently passing the NCLEX licensure exam at above the ninetieth percentile.

TRCCs’ e-portfolio project began in 2004 when we started working with the Connecticut Distance Learning Consortium (CTDLC) and Diane Goldsmith, the consortium’s visionary leader. We initially focused on using e-portfolios as a technology, exploring ways to use CTLDC’s platform. Beginning with one nursing faculty member collaborating with the dean of information technology and a librarian, we implemented e-portfolio use in one course each semester, refining learning activities to develop student



abilities. E-portfolio implementation sparked conversations among students and faculty about the technology but also about nursing and reflection and how students develop as registered nurses.

In 2009, as our interest in reflective pedagogy grew, we joined the Connect to Learning's Making Connections program led by LaGuardia Community College. Monthly face-to-face professional development meetings guided TRCC faculty as we developed our e-portfolio pedagogy (Eynon, Gambino, and Török 2013). We found that the reflective, integrative, and social pedagogies discussed in Making Connections matched our practice-based discipline. When LaGuardia organized the Connect to Learning (C2L) online community of practice, linking Making Connections campuses with e-portfolio innovators nationwide, TRCC was eager to continue the collaboration. As C2L participants we studied the work of multiple theorists, including John Dewey, and other C2L practitioners, applying new insights to our own practice. Dewey's ideas resonate with e-portfolio practice as he connected experience as both a means and a goal of education. He stated, "We don't learn from experience, we learn by reflecting on experience." Building on Dewey's ideas, Carol Rodgers (2002) expanded the concept of reflection with four descriptors:

- Reflection as integrative learning
- Reflection as social pedagogy
- Reflection as systematic and disciplined
- Reflection as a process of guided personal change

We found that teaching students to reflect requires carefully crafted prompts and directed questions. We adapted Rogers' insights to our setting and discipline, introducing TRCC students to e-portfolio technology and the skills and attitudes of self-observation, interpretation, judgment, and planning. Using reflection, our students learn to

- Report own behaviors

- Identify own strengths and areas for improvement
- Connect performance to criteria
- Identify an approach to learning for new growth

According to the Core Competencies of the nationally acclaimed Nurse of the Future program, twenty-first-century nurses are reflective *in action*, *for action* and *on action* (Nurses of the Future 2010). We marry these professional standards and our TRCC Core Values with the C2L design principles of inquiry, reflection, and integration (Eynon, Gambino, and Török 2014). The iterative process of reflection, formative assessment, revision, and integration helps our students develop the knowledge, skills, and attitudes needed for safe and competent practice in a fast-moving and fast-changing health care workplace.

REFLECTION AS A SYSTEMATIC AND SCAFFOLDED LEARNING PROCESS

In the past two years, the TRCC nursing faculty refined and consolidated a sequential progression of reflections related to nursing program outcomes and general education core values and embedded them into each course of our curriculum. As we used e-portfolios to help students develop professional identities, we also developed our own insights into our assignments, the nursing program, and how students learn. Through faculty inquiry and reflection, we developed an integrated, scaffolded strategy to deepen student learning.

In the first course in our curriculum, *Introduction to Nursing Practice*, students become familiar with the technology and process of weekly reflections tied to the core values. The purpose is to develop reflective skills and the ability to listen to and incorporate feedback in a systematic and disciplined way. We introduce our beginning students to the concept of a reflective pause, and to rubrics for critical

thinking, professionalism, and communication. The day after each clinical experience, students use prompts such as this one to share personal reflections with the clinical instructor:

How did you demonstrate critical thinking within the nursing profession today? What was the most difficult part of the nursing process for you? What was the easiest and why? What parts of the implementation of care showed safe competent practice today? What will you do differently, what will you continue? Professionalism reflects integrity, life-long learning, legal, ethical principles, dress codes, timeliness, respect for peers, staff / faculty, joy within nursing and so much more. How do you see professionalism developing in you? Is it changing? How?

In response, one of our students wrote

"In the first weeks I wrote what professionalism meant to me: ... arrive on time, wear a clean and wrinkle free uniform, ID, stethoscope, and watch. At mid-semester I was questioning 'Why do I want to be a nurse, this is stressful?' But after this week I am starting to again see the joy of nursing. I felt like I truly helped my patient. The fact that I am challenged and have to keep learning no matter what is thrown at me really makes me want to be a nurse more and more each day, even if some days are tougher than others."

Reading these reflections, nursing faculty provide feedback in writing, and in post-clinical conferences. Our goal is to help students take a first step in a recursive process of meaning making, to begin developing the cognitive skills and affective dispositions needed for professionalism, communication and critical thinking.

In *Family Health Nursing*, a second semester course, students advance their use of e-portfolios. Here the purpose of reflection is to help students connect theory to practice, classroom learning with clinical application, developing the skills of integrative learning:



"I chose this patient to connect to the geriatric presentations for a few reasons. She ties into my group's presentation of discharge planning and caregiver role strain as well as another group's topic of polypharmacy... In completing the geriatric presentations, and watching the other groups present their topics, I was able to learn effectively about the care of the elderly. Caring for a geriatric patient in the hospital helped to reinforce this content since I feel that I learn best by actually seeing the situation in person."

Through experience and reflection, students see the value of listening to others, connecting and applying their learning for integration into practice.

In our third semester course, *Nursing Care of Individuals and Families I*, our reflective e-portfolio pedagogy focuses students on personal growth. Students now use reflection as a personal guide, deepening their learning and getting them ready to practice as independent practitioners. At this stage, prompts ask students to draw on well-developed reflective skills to recognize the change in their behaviors. *How has your critical thinking changed and developed in regards to direct patient care at the bedside? Please provide two to three specific examples. Consider and reflect on an experience you had in clinical when you realized you applied your theoretical knowledge to your clinical practice.*

"I had no idea how complex nursing would be or the level of responsibility it would entail. I remember the words 'critical thinking' in the first semester. I guess I knew what those words meant but I really had no idea how they would become an integral part of this new profession I was entering.... Since then things have progressed in terms of the complexity of the information as well as the conditions my patients are presenting with. This semester has truly been transformative

for me as a nurse. All of the pieces that I have learned over the semesters have finally started to come together for me as a whole."

Throughout this course, using multiple practice stories, we persistently encourage deep learning, asking students to take ownership of their professional identities. Sharing knowledge, skills, and new attitudes, our students develop a 'professional voice.' Through reflection, they test their 'voice' within a safe environment,



gaining faculty feedback and a comfort level in sharing written reflections with peers.

In their final semester, in *Nursing Care of Individuals and Families II*, students record their perceptions and reflect on the effect perceptions have on care. Powerful stories and supportive discussions fill the semester.

"It made me feel sad when a client told me that it meant a lot to him that I treated him like a human being, not like a drug addict... Six years ago my best friend and twenty-three year old brother

died of a drug overdose. It completely devastated me... so working with clients who are drug dependent brings a lot of emotion in me. I guess you would call it counter-transference. I have witnessed first-hand the hold drugs can have on someone... I try to give clients strength to resist so that maybe I can make up for not being able to help my brother."

Self-awareness is critical for an effective practicing nurse. It allows the nurse to think critically without bias, remaining patient-centered. This and other reflective tools are powerful when shared with others. Students report they are freeing, and faculty report they provide a window into the students' perceptions.

In their fourth semester, our senior students also prepare and share written reflections with our first-year students. Sequenced social pedagogy—using e-portfolios as a site for reflective interaction—informs all four semesters: we focus on connections to faculty and staff as resources in the first semester; sharing knowledge with peers in the second; identifying affective 'ahas' with 'safe' faculty and staff in the third; and, in the fourth, returning to connecting to self and sharing with peers as a graduate entering the profession. The power of this social pedagogy is seen in a first-year student's statement:

"I wasn't sure why I was putting my reflections together in a tool and looking back through them until I read a senior's reflection about what it felt like to be new in nursing and what they could say now. It gave me hope that I would graduate... I wrote my own reflections differently after that."

In the same final semester, in *Nursing Management and Trends*, students' reflections help them become colleagues, emerging nursing professionals. The first project asks them to demonstrate how they believe they have met the program outcomes. Students select and explain arti-



facts, including stories, reflections, clinical data forms, process recordings, nursing communication tools, and presentations.

Pick three of the program outcomes and describe and reflect on how you believe you have met the outcome and include one or multiple artifacts, stories and/or digital clips to support your discussion. In your reflection you might discuss how you've grown, connected your learning across semesters and to your life. Look at the Integrative Learning Rubric as a guide. Send an invitation to a classmate, myself and another faculty member or advisor.

In this course, students create career e-portfolios that include a resume and “something that will entice a reviewer to

Students are prepared for lifelong learning, ready to use the profession's reflective cycle of learning to take intelligent action and learning to think from multiple perspectives and form multiple explanations

interview you.” Students also create an e-portfolio that could be submitted to an educational institution to advance their attainment of a BSN or MSN degree. It incorporates a practice-based research question with an annotated bibliography. One graduating student commented:

“I have figured out what I want to study in my BSN program because I see what I've chosen for articles and reflected on over time. I am seeing that this e-portfolio is more than my personal file cabinet... the works are telling me my story.”

Employing reflective and social pedagogy, our systematic, step-by-step e-portfolio assignments support growth and change from the initial semester to graduation, advancing the development of nursing professionals. Students are pre-

pared for lifelong learning, ready to use the profession's reflective cycle of learning to take intelligent action and learning to think from multiple perspectives and form multiple explanations. Scaffolding of weekly reflections and assignments weave the creation of a nurse who can reflect in a systematic, disciplined, social, integrative, and personal way.

OUTCOMES ASSESSMENT

As we built reflective e-portfolio use into our nursing curriculum, we also began to examine student portfolios for course and programmatic assessment. Examining students' artifacts, reflections, and e-portfolio designs, we found validation for our work—but also surprises. This

important process added life and meaning to student learning and engaged faculty in the effort to deepen our curriculum and our teaching.

Our outcomes assessment process integrated general education core values and program outcomes. Using rubrics calibrated to our scaffolded assignments, we reviewed student work, assessing for critical thinking, information literacy, communication, professionalism, reflection, and integrative learning. This inquiry process supported faculty reflection that highlighted areas where change was needed, and helped develop integrative action plans. In one semester, for example, when we assessed the process recordings stored in student e-portfolios, we found the scores did not reach therapeutic communication

levels. Meanwhile, in student reflections, we found that students had expressed discomfort with patient communication. Reflecting on these findings, we decided that students needed additional experiences to develop their communication skills. To “close the loop,” we implemented a set of interventions: faculty development related to process recordings, student exercises in class, and a new clinical experience in a senior center. Similarly, information literacy reviews led us to generate an online module for constructing annotated bibliographies.

Our C2L colleague, Gail Matthews-DeNatale of Northeastern University, has recently described the ways e-portfolio-based assessment helped her faculty collectively design a more integrative curriculum for their program:

The first three to four courses in each concentration have been co-designed by faculty as an integrated suite that takes students through a ‘cognitive apprenticeship’ in the skills, understandings, and capabilities of professionals within the field. They are designed to foster connected learning, in which each course builds upon and complements the rest, and the faculty have a clear understanding of how ‘their’ courses intersect with and reinforce other courses in the program. (2014)

Describing the outcome, Matthews-DeNatale shows how each course has designated ‘a signature assignment,’ each one progressively different but linked—what she calls ‘variation within continuity.’ At TRCC, our experience is much the same; we use ‘signature work’ that varies within reflective continuity and core values to support deeper learning and student success. And our assessment process is deepening our understandings and our capacities to enact an integrative and reflective curriculum for our nursing program.



BROADENING THE USE OF INTEGRATIVE E-PORTFOLIO PRACTICE

In the past year, the e-portfolio project at TRCC has catalyzed broader, institution-wide change, helping us progress as a learning-centered college. A confluence of events led to this shift. The nursing program's successful use of e-portfolios as a tool and pedagogy, resulting in high student retention and NCLEX success rates, was shared with the broader institution. Parallel to this work, the college's General Assessment Task Force identified an effective paper portfolio process of general education assessment. Our accrediting body, the New England Association of Schools and Colleges, praised the positive work done around general education assessment in some departments, but stressed the need for a broader institutional plan. In this process, it became clear that e-portfolios could serve as connectors

between student learning and institutional assessment.

As TRCC develops an institutional assessment plan, we are building on our strengths as a college. E-portfolios serve as a catalyst in these efforts, opening discussions and renewing faculty engagement in outcomes assessment. Nursing faculty and staff enthusiastically share their work and their learning with their colleagues, facilitating forward movement in meeting the teaching, learning, and assessment needs of the college. The nursing program has a receptive and enthusiastic audience; reflective and social pedagogies are already in use in other college programs. In addition, members of the C2L leadership team and other "super users" of e-portfolios from outside of the college have visited, sharing their strategies for success with key TRCC stakeholders. Through an open dialogue with faculty, administrators, and students, we have reached a consensus: e-portfolios will now be used college-wide for general education and programmatic assessment of student learning.

CONCLUSION

Full integration of an e-portfolio program for outcomes assessment promotes engagement of all stakeholders in teaching and learning. E-portfolio pedagogy links students, faculty, administrators, and the community to "TRCC's mission as an accessible, affordable, and culturally diverse community college that meets varied educational needs by creating an environment that stimulates learning." Our nursing students grow and develop as practitioners through a systematic, scaffolded, and recursive reflective

process. It is through a similar reflective process, messy at times, that we, as nursing educators, built and continue to nourish our program's scaffolded 'signature assignments' so that they are a foundation in teaching and learning. This process now serves as a model for TRCC's general education initiative; we are beginning to build college-wide scaffolded assignments, a critical foundation in e-portfolio programs. We look forward to an ongoing, college-wide process of reflection and change as we all grow and develop as twenty-first-century professionals. ■

NOTE

For more on Connect to Learning, the inquiry–reflection–integration design principles, and other elements of the Catalyst framework, see the Catalyst for Learning: ePortfolio Research and Resources website at <http://c2l.mcncr.org>.

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A Metacognitive Approach to Mapping Collaborative Inquiry through E-Portfolios

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Over twenty years ago, in his treatise on the pedagogy of cases, Lee Shulman, the former president of the Carnegie Foundation for the Advancement of Teaching, noted that “in all forms of professional education there lurks an overarching goal: to teach the neophyte ‘to think like’ a member of the profession.” Shulman describes this developmental process as extending beyond the usual skills and knowledge that constitute the professional curriculum, pertaining to habits of mind that are more metacognitive than cognitive (Shulman 1992). Indeed, in the past two decades we have continued to examine, unpack, and reconfigure curricula, traditional pedagogies, and modes of assessment to engage our students in cognitive apprenticeships that foster disciplinary or professional thinking.

E-portfolios provide a framework for promoting reflection and integrative thinking. The origin of the word “portfolio” is from the Italian *portafoglio*, a case for carrying loose papers. An e-portfolio, however, is not merely a collection of “loose” artifacts but is thoughtfully curated to make the pathways of learning visible. As such, the individual learner’s disposition is guided toward valuing processes rather than end products. How then, might we extend individual “folio thinking” (Backlund et al. 2001) to collaborative learning communities that are shaped through reflection and critical engagement with the inquiry process? The developmental pathway of inquiry learning requires iterative, carefully scaffolded open-ended experiences. Such experiences are not neatly contained in distinct disciplinary boxes—authentic inquiry relies on integrative thinking during engagement with novel situations. As institutions consider whether and how we are preparing our students for careers that increasingly depend upon the integration of knowledge domains, what constraints do our curricular structures impose?

CASE STUDY

During my years at the University of New South Wales, a large research university in Sydney, Australia, I taught Fundamentals of Microbiology and Immunology (MICR2201), a large introductory life sciences class, that, over the course of several years, I transformed into a collaborative learning community. Amongst the many challenges of teaching large introductory courses that serve as prerequisites for subsequent courses in the curriculum is the difficulty of integrating substantive, authentic inquiry projects amidst the learning trajectory that sets the critical foundations for one or more disciplinary majors. Yet it is possible to push beyond the boundaries of the traditional syllabus to achieve both breadth and depth and habituate students toward iterative reflection, analysis, and critique of process.

The transformation of MICR2201 centered on “group folio thinking”: mapping the inquiry process over the course of an entire semester for each collaborative laboratory team. Group folio thinking evolved around a collaborative e-portfolio, called the “e-poster.” The e-poster was a venue for making the developmental process of inquiry thinking visible and scaffolded students’ habituation toward disciplinary thinking as individuals and as collaborative learning communities. In a class as large as MICR2201 (280 students), introducing meaningful group projects poses a significant challenge. Essential microbiology laboratory skills are progressively taught in synchrony with the foundational conceptual lecture component of the course. The collaborative learning communities were composed of ten to fifteen students assigned together in the same tutorial and laboratory sections.

SCAFFOLDING METACOGNITION

Starting from the first week, students embarked on individual inquiry projects that successively built upon their conceptual and



practical expertise as the course progressed. The students worked toward developing a methodology to isolate and identify a single bacterial genus from an environmental sample. Each team decided which genus to study, drawing collectively on their initial ideas and background literature research. While each student worked individually on his/her project, the team collaborated throughout the semester by sharing and drawing on the experimental observations and techniques refined through the contributions of each group member. Central to this process was the e-poster, which mapped the evolution of the team's reflections over the course of collaborative inquiry and the developmental stages of their metacognitive thinking. While science students were familiar with the "conference poster" as a standard format for dissemination of research findings, the e-poster (in contrast to the scientific poster) was not a venue for the presentation of conclusive, often publishable outcomes. Rather, the e-poster encouraged and validated uncertainty, risk taking, and dialogue around preliminary or confusing data and tentative interpretation.

The heart of inquiry thinking lies in the iterative process of critical analysis, comparative discourse, and moments of intrigue or puzzlement that give rise to successive questions. Yet often students perceive the emphasis of inquiry to be focused on the cumulative product, be it a final research paper or essay, in response to what we in the academy appear to reward or value through the design of our courses. In so doing, we risk missing the crucial opportunity to have our students take pause to discover themselves in their learning.

I designed the collaborative e-poster assignment to foster a metacognitive dialogue amongst team members. There are three submissions for the e-poster—at the fifth, tenth, and the final week of the fourteen-week semester—and each submission represents the stage of the team's developmental trajectory in the inquiry process

rather than the products of this process. The students engaged in continuous discussions during the tutorial and laboratory, in informal study groups, and in over 15,000 postings in the course discussion boards. The focus away from outcomes opened up a space for exploratory discourse and an authentic spirit of inquiry. The language that I used in the prompts for the e-poster tacitly validated uncertainty; examples of these are show below, with key phrases italicized:

- What resources or references have you found *so far* that *might* aid you in your investigation? What information in these resources has been relevant to your team discussions *so far*?
- What will be your *initial* approach in this investigation? What are your individual and collective reflections regarding this approach *at this point in time*?
- Identify any steps or topics *you are unsure of*, and how you *might* seek guidance in clarifying these *areas of uncertainty*.
- What questions or concerns do you have *at this time*? What will you do next to *address these questions/concerns*?
- Briefly map your group's progress *thus far* in your inquiry. Identify any paths or outcomes *you are unsure of*. How will you *investigate or learn from these areas of uncertainty*?
- *Reflecting on your research process* throughout this course, tell us about your research.

THE EMERGENCE OF INTRINSIC MOTIVATION AND THE DEVELOPMENT OF SELF-AUTHORSHIP

As students became comfortable with uncertainty, they transitioned from a task- or assignment-oriented disposition to one that was characterized by introspection and learning for the sake of learning. Their dialogue (as captured in their online discussions) also evolved to reveal their intrinsic motivation as they developed an awareness of their capacity for constructing their own

learning frameworks. The students did not limit their discourse to the research projects, but began to create connections through the e-poster to the other elements of the entire course—the lectures, the assignments and papers, and the quizzes and exams. The e-poster became a metacognitive scaffold for the learning community, as the students recognized it as an assessment process for learning rather than *of* learning.

One student posted

"We should use version 3 of the poster as a learning tool and really focus on bringing it together conceptually. I would even suggest that we have a meeting (in a relaxed atmosphere) where we talk about anything that we are still confused about and help each other sort things out..."

Several teams took the unprompted initiative to create their own original concept maps to document the evolution of their conceptual schema. The added layer of visibility revealed through these maps showed me the pathways by which students applied theoretical understanding toward experimental design, alongside their reflections and critical analyses of dead ends or paths that needed revision. At each stage, the teams continued to focus on what they were learning, rather than on "what they needed to accomplish."

In some sense, one could say that this iterative, constructive process mirrors, or is the complement to, the "decoding the disciplines" process eloquently articulated by Middendorf and colleagues (Pace and Middendorf 2004, Díaz et al. 2007). Faculty or experts engage in decoding what Middendorf *et al.* refer to as their "disciplinary unconscious"—the tacit intellectual moves that are automatic for experts of a discipline (see decodingthedisciplines.org)—in order to make the process of disciplinary thinking accessible to learners. In converse, my students were becoming aware of the intellectual maneuvers that gained them entry into new states of understanding. This metacognitive development



became possible in the dialogic space that emerged through the e-poster project, and was built upon the disciplinary, cultural and social diversity of the class.

Interestingly, collaborative folio thinking fostered the emergence of self-authorship for individual students. Baxter Magolda defines self-authorship as “the capacity to internally define a coherent belief system and identity that coordinates engagement in mutual relations with the larger world” (Baxter Magolda and King 2004, xxii). It is through this process that students reflect on what they know, their relationship to the construction of knowledge, and the multiple perspectives (including their own) that inform their judgments and philosophies of knowledge. As students developed an epistemological vocabulary centered on the inquiry learning process, their discussions and online postings transitioned into the language of self-authorship. In one of the final team e-posters, the students created a graphical evolutionary timeline of their relationship to “knowledge.” In the beginning, they depicted the textbook, their teaching assistant, and the Internet as relevant “sources of knowledge” for their inquiry. Halfway through this timeline, they moved toward peer-reviewed journal articles that were selectively vetted to represent “valued knowledge,” and finally, toward the end of the semester, they displayed a group photo of their team as “legitimate sources of knowledge” based on their recognition of their experiential development as scholars.

One student posted

“We have gained an unbelievably in-depth understanding of the methodology involved from strategic planning, constant modification, and the execution of procedures. The need to adopt a flexible experimental protocol was realized at an early stage of the investigation to accommodate further structural changes ... What we have learned from other groups has been undeniably valuable for our own improvements. Our group has grown to realize the significance of teamwork in overcoming

difficult challenges, both in the laboratory, and in the collaboration on the e-posters. We set uncompromisingly high standards for ourselves and this is reflected in our commitment and enthusiasm to this investigation. While there is some disagreement between group members in differing perspectives and ideologies, we believe that we have learned tremendously from each other as a result of the dynamics and the interactivity of the group over the course of this insightful experience. The camaraderie and sharing of knowledge gained are characteristics of our group, which we value highly.”

It was the first time in the many years of teaching this course that I was able to witness what “learning to learn” looks like during a collaborative inquiry process over time. My own lesson was the critical value of creating a forum for validating uncertainty and the time required for nurturing a learning community through transitional phases of self- and group-awareness of learning. Group folio thinking opens up a space for critical engagement and interaction with ideas. Through this process, students charted their own knowledge frameworks while benefiting from collaborative exploration and the creativity that emerges from a community built on trust.

TRANSFER BEYOND E-PORTFOLIOS

The opportunity to observe the transitional stages of group metacognition has had continued impact on my work beyond MICR2201. At my current institution, Brown University, I am working with a multidisciplinary team of faculty and chairs across the disciplines through an Association of American Universities-funded project to enhance mathematical literacy in introductory courses in applied math, biology, chemistry, economics, engineering, and physics. Transformation of these courses requires the deconstruction of the disciplinary practices of mathematical thinking to distinguish the purely mathematical intellectual moves from those that are conceptually discipline-based. Group folio thinking does not

have to strictly take place within an actual e-portfolio, but can be realized through iterative learning experiences that allow a learning community (which, in this case, includes students working collaboratively in problem-solving sessions throughout the semester) to “see” the developmental progression of their thinking. Our goal, in this instance, is to identify the transitional phases of this process and create appropriate group problems and supporting modules to further enhance this developmental path. While problem sets may in and of themselves not appear to lend themselves to the inquiry-based approach in MICR2201, the key is to encourage questioning and validate engagement with process. This requires the purposeful integration of collaborative dialogic space and facilitation of dialogues to foster metacognition. Feito (2007) has described how allowing the discourse of “not knowing” allows the development of genuine collaborations among students and instructors. In so doing, we can celebrate the true value of questioning and the intrigue of uncertainty as critical elements of scholarly practice. ■

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Portraits of Learning: Comprehensive Assessment through E-Portfolios in the Metro Academies Project

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Why not establish an intimate connection between knowledge considered basic to any school curriculum and knowledge that is the fruit of the lived experience of these students as individuals?

Paulo Freire, "Pedagogy of Freedom" (1998)

Candace Masaquel, one of five siblings raised by a single mother, had dreams of attending university but was concerned her family finances would not afford her the opportunity. Grateful to gain entry to a four-year program at San Francisco State University (SF State), Candace still felt trepidation about how she would manage her courses, fit in with the large student body, and ultimately forge her personal and professional path toward a future in health education. Candace's fears were calmed, however, when she found a supportive home in the Metro Academies community. Metro is an academic program that redesigns the first two years of college with the inclusion of several high-impact educational practices that have been spotlighted by the Association of American Colleges and Universities (AAC&U). These practices include a learning community of two classes per semester for two years; a first-year experience course; common intellectual experiences; repeated practice of core academic skills in writing, critical thinking, oral communication, quantitative reasoning, and information literacy; collaborative assignments and projects, and exposure to social justice, cultural diversity, and global learning.

As Candace progressed through her first years of college with her Metro cohort, the electronic portfolio (<http://candacema->

saquel.myefolio.com/) she created prompted her to collect and reflect upon her academic and personal experiences. This process proved to be a grounding and transformative component of her Metro Academy experience: "I knew that I wanted to be a part of public health, but I didn't know what that meant. My portfolio helped me to think, to really organize my thoughts and my work. Now I'm able to say, this is who I am and this is who I want to be in the future."

SF State places a high priority on social justice and student success, especially for first-generation and underserved populations. This case study illustrates how a committed partnership between an academic program, Metro Academies, and a central service unit, Academic Technology, worked to provide and scale the transformative practice of e-portfolio assessment for this important group of students.

METRO ACADEMIES AT A GLANCE

In 2007, a longstanding partnership between City College of San Francisco (CCSF) and SF State developed a curricular innovation aimed at increasing persistence and graduation for low-income and underrepresented students. After reviewing the higher education literature and studying student patterns at these two institutions, it was clear that the first two years were the leakiest part of the higher education pipeline. Metro is a multi-semester cohort-style learning community program, in which first-generation, low-income, underrepresented first-year students study together in two general education linked classes over three to four semesters.



The curriculum is designed to engage students early in the big questions in their field of interest, such as health or science. Students are encouraged to support each other academically and socially, and to form strong relationships with faculty. In addition, Metro provides a series of wrap-around services, including tutoring, academic counseling, and financial aid support. With faculty from both segments working together on curriculum and assessment tools, this design fosters a very close alignment between the community college and university. Faculty also are required to participate in forty-five hours of professional development to enhance their teaching practices and build a community dedicated to student success.

The majority of Metro students place at two to three grade levels below college-ready English, with most testing as “double remedial” in both English and math. Despite such placement, data from Metro students completing the program show them strongly outperforming their peers at the same institution. The Metro students at SF State persist into their junior year at a 20 percent higher rate than their fellow stu-

dents on campus, while the CCSF students are nine times more likely to be transfer prepared than a matched comparison group. Students in Metro are 10 percentage points more likely to graduate in four years and the anticipated five-year graduation rate is expected to outstrip the campus norm by 30 percentage points. Finally, a cost study of the Metro model finds that by reducing attrition and decreasing time to graduation, tremendous cost savings are realized on both campuses. At SF State an investment of \$944 per Metro student leads to a cost reduction per graduate of \$17,879. At CCSF, the investment of \$1,484 per Metro student results in a cost reduction per transfer of \$22,714. For details, visit metroacademies.org/news/coststudy.

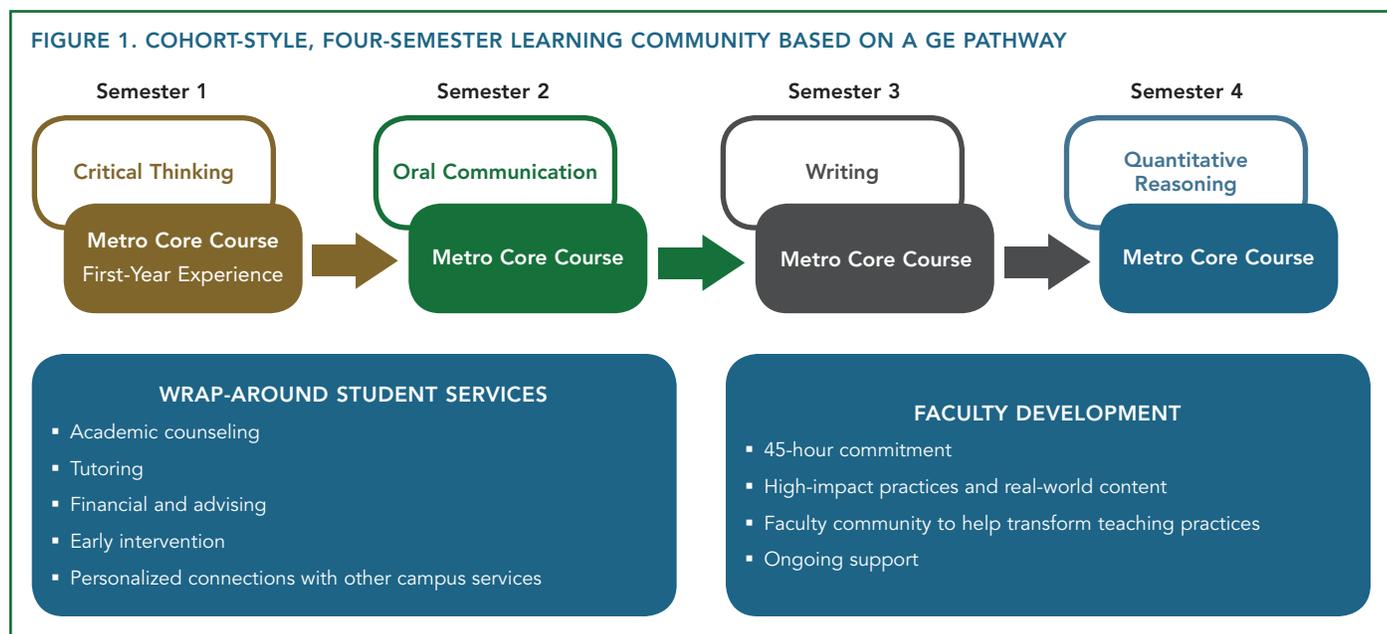
THE CULTURE OF ASSESSMENT AND ITS IMPACT ON STUDENTS

In their summary of e-portfolio practices, Clark and Eynon (2009) noted that a tension exists between educators who view the goal of assessment as producing evidence for accountability and accreditation purposes, and those who believe it should be used to create powerful

personalized learning experiences. Metro embraces both aspects, taking the view that e-portfolios present the opportunity to collect and review an array of academic evidence and relevant “lived” expressions of learning in addition to its use as a tool for program assessment and change.

AAC&U has advocated for well-planned electronic portfolios that provide opportunities to collect data from “multiple assessments across a broad range of learning outcomes while guiding student learning and building self-assessment capabilities.” Furthermore, “assessment of work in (portfolios) can inform programs and institutions on progress in achieving expected goals” (AACU 2009).

Like other historically underrepresented students, Candace benefitted from engaging in e-portfolio assessment practices, rather than traditional testing. Candace’s e-portfolio gave her a place to explore and find her academic identity, and gave her instructors a way to authentically assess her work. Her collection of coursework and reflections demonstrated how she had integrated her learning across courses and lived experiences.





PLANTING E-PORTFOLIOS IN THE METRO ACADEMIES PROGRAM

Metro Academies presented a unique opportunity to use e-portfolios in a two-year learning community for first-time, first-year students from historically underrepresented communities. E-portfolios presented opportunities for a rich assessment that could help students see themselves as learners and recognize their growth over time.

Metro's culture supported the integration of e-portfolios since faculty were interested in collecting multiple examples of authentic, reflective, and integrative student work in a variety of formats. They wanted to observe academic development over time, and have students collect evidence of context-rich integrative learning connected to their lived experiences. Faculty also wanted to track competencies in key foundation areas—writing, quantitative thinking, public speaking, and critical thinking. As part of the Metro/academic technology e-portfolio implementation project, a faculty workgroup and curriculum team adapted AAC&U Valid Assessment of Learning in Undergraduate Education (VALUE) rubrics and mapped signature assignments to the program-level student learning outcomes. E-portfolios in Metro represented an opportunity to ensure that the culture of assessment was “edu-diverse” from the start.

OBSTACLES TO OVERCOME

Lacking dedicated resources and adequate staffing, this project initially faced several challenges. First, it was difficult to pool and promote educational best practices due to the fact that many of the sixty faculty members were part time and had different comfort levels with technology. Faced with crowded courses, some faculty felt pressure to “get through” the curriculum and found it difficult to integrate e-portfolio assignments. Many preferred to use e-portfolios to showcase completed,

polished work, instead of works in progress. Second, faculty and student support needs varied over time, since a unique aspect of e-portfolio development is the simultaneous process of developing both technical and cognitive skills required for digital literacy development. While some students and faculty initially struggled with the technical skills, most students required more guidance in the process of posting reflections and content that appropriately showcased their work, and faculty in the process of nurturing and evaluating these contributions. Although this is a technology-enabled project, the reliance on academic technology to provide the technical solution has resulted in few technology obstacles, except for the logistical challenge of provisioning and transferring e-portfolio accounts as students pass through the program.

SUCCESSFULLY BUILDING AN E-PORTFOLIO CULTURE

E-portfolios have become an important avenue to collect, select, and reflect on Metro student work throughout their two years in the program. It gives students the opportunity to reflect on their learning both within and between courses. It also gives them a platform to bring their whole selves to their efforts to build identities as young scholars, embracing and integrating their ethnic heritage through the use of video, multimedia, photos, and stories. They even make good use of the language translator to share what they do with those in their lives who speak a language other than English, as many of our students speak a language other than English at home.

Students are seeing the value of the e-portfolios in their own lives. In an end-of-year survey compiled by the Connect to Learning network, one student said that using an e-portfolio “helped me see my assets” and another commented, “I was able to reflect back on the importance

of the classes I have taken. I learned that each class and each activity contributes to the kind of person I am today.” Others commented on how using an e-portfolio allowed them to see their growth since their first year and realize how much they have accomplished. They are finding that building an e-portfolio is not only engaging and personally meaningful, but can help them put forward their best academic identities.

THE ROLE OF ACADEMIC TECHNOLOGY

The changing demographic of faculty and students in higher education has increased the expectations for academic technology services in ways that better conform to their experiences outside of the campus. Non-traditional students, who may attend part-time, work full-time, have dependents, or be single parents, require increased flexibility to complete their studies. To support the expanding role that technology now plays in the lives of all students and faculty, academic technology provides support wherever teaching and learning touches technology, including enhanced classrooms, video and media services, technology applications, and training and support. Academic technology helps faculty develop curricula in an expanding continuum of instructional modes that use technology, thereby helping ensure universally accessible, flexible, and meaningful learning experiences.

Now that academic technologies occupy a mission-critical status on campuses, exemplary implementations of technology-enabled initiatives such as e-portfolios need to focus on three intersecting elements:

- *Educational best practices*, to enable best teaching and learning practices from an educational planning and assessment perspective;
- *Student and faculty support systems*, to offer comprehensive and tailored peda-



gological and technical support for faculty and students to design and engage in media-rich learning activities;

- *Technology infrastructure*, to provide a robust, reliable, and scalable technological environment in which students and faculty can build, archive, and share their work.

Since 2005, academic technology at SF State has developed the organizational capacity and expertise to support roughly 30 percent of academic departments using e-portfolios. In addition to providing the educational best practices, student and faculty support systems, and the technology infrastructure that the departments rely upon, academic technology has also facilitated a cultural shift of assessment within programs. Drawing inspiration from “poly or permaculture” practices in agriculture, academic technology began to describe its work metaphorically as planting an “e-porticulture” across the campus. E-porticulture was defined as “the act or custom of learning, developing intellectually and professionally, and transmitting knowledge through the creation, review, and assessment of authentic, reflective, and integrative student work that is shared over time via electronic portfolios” (Shada et. al 2009).

Some of these cultural transitions have been direct, such as moving from required paper-based portfolios to similar online versions. Others have involved more groundwork since they involved shifting from “monoculture” practices, such as high-stakes summative testing, towards a range of more flexible assessment strategies.

FACULTY LEARNING COMMUNITIES

One of the keys to Metro’s success has been its faculty learning community. Metro instructors work collaboratively to focus on student success. They learn how to use evidence-based educational practices to provide interactive, engaging

instruction. This process fills a collegial vacuum felt acutely by part-time instructors who mainly teach lower-division courses. This community spans the general education curriculum and multiple disciplines, and represents an innovative approach to professional development. It gives instructors the opportunity to meet monthly to develop engaging pedagogy and share best practices. They discuss educational equity through the larger context in which our students attend college. Instructors of linked courses also have time to identify common themes and readings. These meetings lend themselves to conversations about student work, naturally integrating the e-portfolio into faculty development.

FROM PLANTING AND GROWING TO HARVESTING AND EXPANDING

To address the success of academically under-prepared students who are disproportionately of low-income and underserved backgrounds, colleges and universities must stop tinkering at the margins of institutional life, stop the tendency to take an “add-on” approach to institutional innovation, and adopt efforts that restructure the learning environments in which we ask students to learn (Engstrom and Tinto 2009).

The Metro project has created an opportunity to cultivate and break new ground with e-portfolios to support curriculum and assessment development. Partnering with academic technology has provided an incubator-learning environment to refine emergent educational best practices, faculty and student support structures, and the technological infrastructure needed to help a diverse group of students develop twenty-first-century digital literacy skills. This foundational work will become increasingly important as Metro scales up to serve 25 percent of all first-time freshmen at SF State. The use of e-portfolios for general education assessment is also under consideration.

Metro Academies recently won the 2013 Most Visible Progress Degree Completion Award bestowed by the Association of Public and Land-Grant Universities.

Candace is now successfully on her path to global citizenship and will be graduating with a master’s degree in public health in 2015. Her undergraduate e-portfolio work gave her the opportunity to make an intimate connection between knowledge of her school curriculum and the fruit of her lived experience. Ultimately, e-portfolios are helping to restructure the environment in which Metro students like Candace are learning, and in the process are promoting a culture of direct evidence, continuous quality improvement, and campus-wide scholarship. ■

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Putting E-Portfolios at the Center of Our Learning

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Stella and Charles Guttman Community College, formerly the New Community College, is the first community college to open in the City University of New York in over forty years. When we welcomed our inaugural class in August 2012, Guttman introduced an innovative educational model that brings together multiple high-impact practices (Kuh 2008) such as first-year experience, learning communities, and experiential learning. As Tom Bailey, director of the Community College Research Center at Teachers College, Columbia University, said,

The important thing about the New Community College is not any one thing they're doing, but that they're doing all of them together. All the research shows that if you do them alone, for a modest amount of time, they have a modest positive effect, but it doesn't last. This will be a chance to see what happens if you do them together, consistently, over a longer period of time (in Perez-Pena 2012).

Guttman's goal in transforming the traditional model of community college education is to significantly increase student engagement, success, retention, and graduation rates.

E-portfolios are central to this transformation. They enable us to connect our high impact practices into a holistic, integrative learning environment for students. E-portfolios also serve as the primary vehicle for assessment at Guttman, using authentic student work to create a culture of learning and continuous improvement. Guttman is the first college in the country to be built with e-portfolio as the centerpiece of learning, connecting curricular, cocurricular, and institutional structures. Our vision statement reflects this:

As an institution focused on learning and improvement, e-portfolio is an integral and integrating component at the center of Guttman Community College. The use of e-portfolio spans the breadth of our work and organization from students, faculty and

staff, to programs, from academic and curricular to administrative and institutional functions. E-portfolio is an environment in which we showcase our work, articulate and reflect on our learning, assess our outcomes, document improvements and change, and communicate to each other and the larger communities we are a part of." (E-portfolio Task Force 2013)

While we acknowledge that it is rare to have the opportunity to build a new college from the ground up, we believe there is much to be learned from our experience. Generating a "vision of the possible," Guttman has the freedom to experiment, demonstrate, and share what it means to build e-portfolios into virtually every aspect of campus life, creating a multi-layered e-portfolio culture. We are also interested in identifying the transportable processes and elements of this model and sharing our lessons learned. We hope our work will help demonstrate the transformative potential that e-portfolios offer higher education.

BACKGROUND

The planning for Guttman's e-portfolio initiative predates the opening of the college. The initial concept paper proposed that we adopt a portfolio system for assessing student learning, growth, and mastery of core competencies (The City University of New York 2008). A working committee for assessment and portfolios recommended "the use of portfolios as the core of the assessment system" (The City University of New York 2010, 55). It also recommended that students create an e-portfolio during their summer bridge program and add to that e-portfolio during their time at the college, culminating in a graduation portfolio where they "demonstrate mastery of critical skills as well as reflect on growth during their college experience" (65).

Moving from concept to practice is always a challenge. While ideas from the concept paper and working committee report have been modified and adjusted as needed, we remain true to many of the core



recommendations. We use e-portfolios “at scale”; they are a critical connector for every student’s Guttman experience and serve as a catalyst for learning—for students, faculty, and the institution. Our e-portfolio philosophy, developed in 2013 by a college task force, articulates this concept:

We believe e-portfolio can serve as the conversational centerpiece and clearinghouse for institutional learning and change. E-portfolio catalyzes learning, assessment and communication in proportion to its use.... As a community of learners, we use e-portfolio to define and shape integrated curricula, advising programs and career preparation through asynchronous exchanges of knowledge, culture, and experience. (E-portfolio Task Force 2013)

In addition to the task force’s work, a faculty team participates in the Connect to Learning (C2L) project, based at LaGuardia Community College (see the related article on page 8.) C2L’s Catalyst for Learning framework (Catalyst 2014) helps structure the complex nature of our e-portfolio implementation. Many of our e-portfolio practices are influenced by what we have learned from partner campuses in the C2L network.

As a result of these efforts we have a burgeoning e-portfolio culture. By focusing on integrative, reflective, and social pedagogy, e-portfolio use helps create a holistic learning

experience linking teaching and learning, assessment, and professional development.

TEACHING AND LEARNING

At Guttman, students’ e-portfolio experiences begin in the summer during their mandatory bridge program. Using Digication, Guttman’s e-portfolio and assessment platform, students create their learning e-portfolio. They author a “Who Am I” essay and begin to customize their e-portfolio. E-portfolio use is integrated throughout the summer bridge curriculum and cocurricular activities, including a group research project focused on a New York City neighborhood. At the conclusion of the bridge program, students submit their e-portfolios to Digication’s assessment system; those portfolios are used to assess the program and serve as a baseline measure of our Guttman learning outcomes (GLO)—the college’s five institutional core competencies (see below).

Student use of e-portfolios helps unify Guttman’s required first-year curriculum, which consists of courses such as City Seminar, Ethnographies of Work, Composition, and Statistics. Our faculty and first-year advisors (termed “student success advocates” at Guttman), engage students in activities that use reflective and social pedagogies to connect and support our integrative curriculum. For example, at the mid-point of our twelve-week fall and spring sessions, students engage in a community-service experience. Through an activity in City Seminar, students use the e-portfolio to reflect on their experience and link it back to their course-based learning. In Lori Ungemah’s class this past fall, students composed a self-reflection letter after being prompted “to explain how your experience connected to ideas you had already learned in City Seminar this fall. Where did you see overlap? How did your experience affect your thoughts on our City Seminar topic? What resonated with you most?” (Ungemah 2013).

In addition to course-based applications, e-portfolios are used in our academic support structures, helping students develop the skills and persistence needed to be successful.

According to Ariana Gonzalez-Stokas (personal communication), “Our academic support space, known as Studio, seeks to support students in their development of academic competencies and cultivate a sense of ownership over their learning and identity as a college student.” In this support context, scaffolded reflective journaling and project-based activities connect with the bridge program and first-year coursework, enabling students to gain a better understanding of themselves as learners.

Through deliberate weaving of e-portfolios across the curriculum, experiential learning opportunities, and academic support, the Guttman model creates a connective space for learning in the first year. Students can see their own growth and learning over time; e-portfolios facilitate their ability to grasp how each individual component fits into a holistic, integrative learning experience.

As we begin our second year at the college and develop our upper-level courses and degree programs, we are working with faculty to extend the connective role of e-portfolios. In our human services program, for example, Nicole Saint-Louis developed a template that provides opportunities for students to connect their second-year coursework, fieldwork, and a capstone project with the GLOs. In addition, our second-year career strategists work with students to develop showcase e-portfolios. The strategists also developed a comprehensive resource e-portfolio that serves as a virtual hub for second-year students to communicate with their strategist and to find information about their advising and transfer processes.

Our pedagogical uses of e-portfolios center on improving learning through careful attention to the curricular, cocurricular, and affective dimensions of the student experience. We want students to become reflective practitioners with an understanding of the

GUTTMAN LEARNING OUTCOMES (GLO)

Guttman Community College’s learning outcomes encourage students to aim high and provide them with a framework for their entire educational experience—connecting to school, college, work, and life. These outcomes build on Lumina Foundation’s Degree Qualification Profile.

1. Broad, integrative knowledge: general education
2. Specialized knowledge: the majors
3. Intellectual skills for lifelong learning
4. Civic learning, engagement, and social responsibility
5. Applied learning



learning process and who they are as learners. One student, Sam van der Swaagh, articulated this in a reflection he authored. For Sam, “The e-portfolio platform provides an area to display ‘how I arrived here,’ which is much more interesting than merely showing the final products. The reflective nature of [an] e-portfolio provides me with a professional website to showcase who I am as a person and displays how I became who I am... [it] essentially profiles me as a student and presents my narrative” (2013).

OUTCOMES ASSESSMENT

Guttman has a strong commitment to ongoing, comprehensive assessment that examines student learning at both the individual and aggregate levels. This commitment is centered on the concept of using assessment for learning (Barrett 2004) across the various layers of the institution—students, faculty, and programs—with the ultimate goal of improving student learning, persistence, and success. Since our assessment structures were constructed with a strong emphasis on examining student learning via e-portfolios, we did not encounter faculty “buy-in” issues and were consequently able to move quickly into practice—examining work, reflecting on findings, and identifying and implementing changes.

Our assessment of student e-portfolios began last year when we examined portfolios from the summer bridge program. Based on that evaluation, we found the majority of students were not comfortable using e-portfolios and that the bridge program experience was fragmented. We revised the curriculum and created a more cohesive experience, integrating e-portfolios into each component of the program.

Ongoing assessment is essential to our work; coordinated by our Center for College Effectiveness, dedicated assessment days are scheduled into the mid- and end-points of each twelve week fall and spring session. While a variety of assessment and professional development

activities take place on these days, the primary goal is for faculty and staff to work together assessing first-year student work and reflections from their e-portfolios. Instructional teams, which include faculty and student success advocates, conduct an assessment of each student. Teams then identify any individual interventions and action plans needed to help students succeed academically.

E-portfolios allow us to focus our institutional assessment on authentic student work and reflections connected to real classroom, experiential, and cocurricular activities. A team of faculty and administrators attended AAC&U’s General Education and Assessment Summer Institute last spring and, informed by the work of our colleagues at LaGuardia Community College (Arcario et al. 2013), developed a comprehensive GLO assessment plan. Teams of faculty, staff, and students at the college will engage in a three-year inquiry, reflection, and integration cycle, examining snapshots of student e-portfolios collected at various milestones: the conclusion of the bridge program, the end of the first-year experience, and graduation. These snapshots will allow us to look longitudinally at how students are learning and growing in relation to the GLOs, identify any needed curricular improvements, and implement changes.

We envision our assessment work as an ongoing, action-research process—planning, evaluating, reflecting, and implementing changes in a cyclical process over time. Our work will mature and deepen as our students move through their programs. Our goal is to become a learning organization, where faculty, staff, programs, and the institution learn and grow as our students learn and grow.

PROFESSIONAL DEVELOPMENT

Given the pervasiveness of e-portfolios across the student learning experience and its central role in Guttman’s institutional model, professional development is critical

to our work. Our challenge in this area is two-fold. We are bringing many new faculty members on board each year, the majority of whom are not familiar with e-portfolios. We also are still building our professional development structures, working to integrate e-portfolios into them.

Our initial professional development work focused on introducing e-portfolio. Throughout our first year, faculty and staff participated in e-portfolio workshops and activities. Participants were learning “on the fly;” leaders helped them work with the technology, design integrative assignments, and develop reflective prompts. This year we developed a comprehensive professional development plan to introduce e-portfolio pedagogy and practice to our new hires. We also worked closely with our peer mentors and graduate coordinators.

E-portfolio leaders work to integrate e-portfolios into our professional development practices, using e-portfolios to “practice what we preach.” For example, we developed professional development e-portfolios for our E-portfolio and the Arts and E-portfolio Peer Mentor/Grad Coordinator Bootcamp workshops. In addition to sharing materials, participants engage in social pedagogy, commenting and engaging with each other via e-portfolios, both before and during workshops.

While workshops are beneficial, we know and see from our C2L colleagues that successful e-portfolio-related professional development activities utilize a sustained seminar approach. We are exploring ways to integrate this type of approach into our college structures. This spring we will pilot communities of practice, engaging small groups of faculty and staff with e-portfolio pedagogies. Connecting with our outcomes assessment work, our GLO teams will participate in sustained professional development. As we launch our degree programs, we will offer ongoing professional development with faculty to integrate e-portfolios into the second-year curricula.



CULTIVATING AN E-PORTFOLIO CULTURE

For many e-portfolio leaders, the phrase “scaling up” refers to growing or broadening an e-portfolio initiative. Having started “at scale,” we understand the phrase to refer to the deepening of our e-portfolio use, finding ways to further integrate it into Guttman’s learning culture. We have taken several steps this past year to cultivate that culture. At the same time, we see innovative uses for e-portfolios emerging from our faculty and staff.

Guttman does not use a learning management system. E-portfolios are the vehicle through which we deliver course materials to students. Each instructional team develops an e-portfolio that contains syllabi, assignments, videos, or other instructional materials that are shared with students and updated regularly, providing them a single space to find what is needed for courses.

In addition, almost every faculty member and advisor has his or her own e-portfolio where they share information about themselves, their teaching and research, and outside interests. Karla Fuller, for example, developed an e-portfolio for reappointment where she shares a narrative curriculum vitae and reflections on her growth as an academic and scholar. Fuller explained the value of this exercise in terms of both pedagogy and professional development. When she saw

How artfully one can present information as evidence through this venue, I decided to create my own e-portfolio for two main reasons: (1) to model curation of an effective e-portfolio for my students and (2) to document my own professional growth and development as an early-career faculty member. After working very hard on my e-portfolio for months, I really liked the interactive way I could share my professional life with others. (personal communication)

We also see uses for e-portfolios that have evolved “organically” from faculty and staff. The City Seminar committee created a curricular e-portfolio that provides a wealth

of resources including curriculum and learning outcomes, sample syllabi, videos, and assignments. Other groups followed its lead and we now have portfolios for each of our first-year courses. They are dynamic resources; faculty continually update and add to these repositories, creating a rich library of shared instructional materials accessible to all faculty and staff.

Our peer mentors find creative uses for e-portfolios. They develop resource e-portfolios that provide academic support materials for students. They also created an e-portfolio for our bridge program’s commonly assigned reading. This e-portfolio, accessed by students before the bridge program began, contained videos in which mentors discussed the book along with questions for students to respond to via the e-portfolios.

These examples, which emerged both from the innovative thinking of our faculty, staff, and peer mentors, and from our curricular, cocurricular, and institutional uses of e-portfolios, combine to demonstrate the transformative potential of e-portfolio use. Through careful planning and deliberate implementation we see an e-portfolio-based learning culture developing.

CONCLUSION

Guttman’s e-portfolio work will allow us to see a “vision of the possible,” the value of using e-portfolios while persistently combining multiple best practices, as scholar Tom Bailey reminds us, over a substantial period of time (Perez-Pena 2012). While we cannot yet examine the long-term impact of e-portfolios on learning, our preliminary findings suggest that

- e-portfolios help students unify and make meaning out of their educational experience;
- thoughtful and deliberate integration of e-portfolios into any one aspect of college life can make a difference, having a positive impact on students, faculty, and the institution. Connecting e-portfolios

across multiple structures has an even greater impact on a college culture;

- a deliberate and intentional approach to professional development is key to e-portfolio pedagogy and outcomes assessment; going forward, more sustained work in this area will be vital to our success.

At Guttman, we are privileged to have the unique and challenging opportunity to build an institution with e-portfolios at the center of our learning. We know there is more to be done to fully realize the promise of our vision and the integration of e-portfolios into our college structures. We hope by continuing to share our practices and findings that we can contribute to the broader e-portfolio field and demonstrate e-portfolios’ potential to catalyze learning and change for students, faculty, and the institution as a whole. ■

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The Next Whole Thing in Higher Education

► **Randy Bass**, vice provost for education, Georgetown University; and senior researcher, Connect to Learning Project

E-portfolios are decidedly *not* the hottest thing in higher education. They just don't fit the profile for a sexy ed-tech trend. For example, their success does not threaten to disrupt the entire business model of higher education. In fact, when thoughtfully employed, e-portfolios can be a mechanism for greater institutional coherence. Another serious impediment to e-portfolio's status as an ed-tech trend is that they don't fit into a neat ed-tech category. The *technology* of e-portfolios, though enabling or inhibiting, is not the crux of the "it" that makes e-portfolios effective. E-portfolios are at heart a set of *pedagogies and practices* that link learners to learning, curriculum to the cocurriculum, and courses and programs to institutional outcomes.

That e-portfolios are practices more than technologies means there is no plug and play "total e-portfolio solution" to be purchased or licensed. Institutions with effective e-portfolio implementations have shown that the value of e-portfolios depends on inclusive planning—building thoughtful linkages among faculty and other stakeholders and connecting with larger systemic efforts and cross-boundary initiatives such as the first-year experience, general education, and institutional outcomes assessment.

The ed-tech trends garnering all the attention—data and learning analytics, MOOCs, online and blended education, open content, competency-based learning, and for-profit companies delivering one or more unbundled services—are all likely to

be part of the future transformed landscape of higher education. Indeed, they all carry potential for improving student success, while striving to provide greater access, scale, and control of costs. Like these more visible innovations, e-portfolios are *learning-centric*. In contrast to hotter trends, however, e-portfolios uniquely privilege the development of the whole student, the integrative nature of education, and the importance of validating the distinctiveness of local institutions and communities.

I don't mean this conservatively or regressively. E-portfolios are change agents; they belong to an emergent learning paradigm and, as we argue in the Connect to Learning Project, have the capacity to *catalyze* change toward that paradigm. They do this in at least three crucial ways that are profoundly necessary at this potentially disruptive and disintegrative moment in higher education:

1. *E-portfolios provide a mechanism for integrative learning*; they give students a way to make connections across courses and experiences in order to create a whole greater than the sum of the curricular parts. As the options for acquiring isolated and decontextualized educational experiences proliferate, the need to support students in personalizing and contextualizing their learning is more crucial than ever. Indeed, emerging data suggests e-portfolio practice supports both improved student success (e.g. retention) and deep learning.
2. *E-portfolios provide a means for integrating institutional measures of learning*. Mature

e-portfolio initiatives are sites of integrative assessment, bringing together student success and learning outcomes data in the context of authentic student work. Although the term "learning analytics" is often narrowly construed to refer only to data produced from virtual systems, e-portfolios epitomize the definition of learning analytics, as given by the Society for Learning Analytics Research: "the measurement, collection, analysis and reporting of data about learners and their contexts, for purposes of understanding and optimizing learning, and the environments in which it occurs"

3. *E-portfolios can provide a means for clarifying and affirming localized institutional value*. As large portions of the curriculum become commodified, generic, and interchangeable, e-portfolios provide an unparalleled means for leveraging the impact of local high-impact educational practices and making visible the distinctive educational contributions of faculty, place, and the local community.

In a landscape of unbundled educational services and increasingly granular learning experiences, e-portfolios are agents of integration. They are demonstrating the capacity to create an integrative and coherent context for students to make sense of their learning and for institutions to get an unmatched, holistic view into the impact of their curricular and institutional designs. All this makes them poorly suited to be the next hottest thing. Let's hope it stays that way. ■

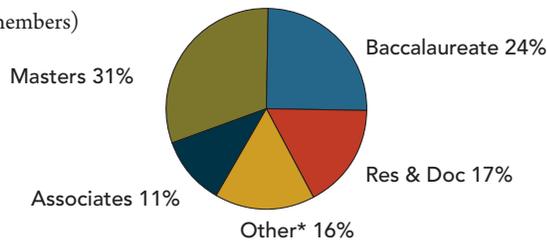
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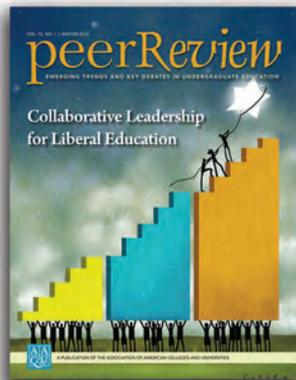
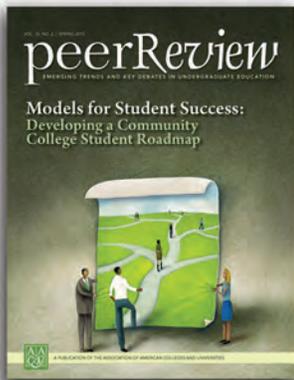
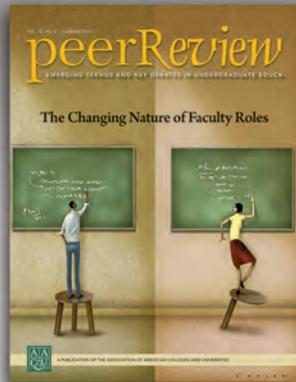
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