IJeP International Journal of ePortfolio

Volume 3 • Number 1 • 2013
ISSN 2157-622X

A Publication of the Center for Instructional Development and Educational Research (CIDER) in the Division of Undergraduate Education at Virginia Tech and the Center for Teaching and Learning (CTL) in the Office of the Vice President of Instruction at the University of Georgia.

Affiliates of the *International Journal of ePortfolio*

Association for Authentic, Experiential and Evidence-Based Learning (AAEEBL)
Association of American Colleges and Universities (AAC&U)
Australian Flexible Learning Framework
2013 ePortfolio and Identity Conference

Manuscript Review Board

The International Journal of ePortfolio (ISSN 2157-622X) is a Publication of the Center for Instructional Development and Educational Research (CIDER) in the Division of Undergraduate Education at Virginia Tech
and
the Center for Teaching and Learning in the Office of the Vice President for Instruction at the University of Georgia.

IJeP International Journal of ePortfolio

Volume 3 • Number 1 • 2013

Instructional Article

Assessment Articles

Technology, Policy, and Management Articles

Technology, Policy, and Management Articles

International Journal of ePortfolio
http://www.theijep.com

2013, Volume 3, Number 1, 1-11
ISSN 2157-622X

Exploration of ePortfolios for Adding Value and Deepening Student Learning in Contemporary Higher Education

Muireann O'Keeffe and Roisin Donnelly
Dublin Institute of Technology

In recent years, higher education has undoubtedly faced a sea-change. The landscape of the sector has shifted with changes in the student body, increased pressure from government on costs and procedures, and an array of curricular transformations. While much has been written about the use of learning technologies generally and about ePortfolios in particular, there has been a lack of robust evidence about their added value for enhancing student learning opportunities. A case study of the integration of ePortfolios into a professional development master's program in a Higher Education Institution in Ireland is presented, and added value in terms of the creative learning process is explored. Findings from this study indicate that development of the awareness and understanding of creativity within the student cohort is necessary to nurture creative and critical thinking abilities.

Gaynor (2010) reported that higher education institutions in Ireland, as elsewhere, are facing severe challenges on a number of fronts: increasing enrollment figures, coupled with dwindling state support, are impacting institutions from a resource perspective, while the shifting nature of knowledge(s) and needs of an increasingly complex global society are requiring changes in order to support student learning to a high level. A recent comprehensive study by JISC (2008) suggests that perhaps the most pressing reason for taking a closer look at ePortfolios is the indication that use of these tools can promote more profound forms of learning. Conversations have been taking place recently on the transformative potential of ePortfolios in different professional disciplines (Batson, 2011; Peacock, Murray, Kelly, & Scott, 2011). Batson (2002) has argued that electronic portfolios have a greater potential to alter higher education at its very core than any other technology application we have known thus far**.** However, Stefani, Mason, and Pegler (2007) argue that whether ePortfolios achieve any transformative potential will be largely determined by the level and type of student participation.

This paper explores the use of ePortfolios in contemporary professional higher education. While the promise that they hold – that of a richer, transformative educational experience for all – has been long documented from both a pedagogical (Cambridge, Kahn, Tompkins, & Yancy, 2001; Emmett, 2003) and efficiency perspective (Jafari & Kaufman, 2006), and indeed from different contexts such as that provided by Duffy, Anthony, and Vickers (2010), who researched the added value of ePortfolios for student learning from work-based learning placements. Recent seismic shifts in education provision mean that a fresh lens is required to explore the added value of this student-centred technology for current professional development.

It is envisaged that this paper will be useful for those who use or support others' use of ePortfolios, such as practitioners and managers in higher and further education, faculty developers, those involved in initial teacher training, and those involved in the management and implementation of continuous professional development and lifelong learning.

This case study of a professional development master's program in Applied eLearning offers useful insights into how an Irish higher education institution supported students in becoming critically reflective learners through the development and use of an ePortfolio.

Literature Review

The literature has been consulted under three main aspects. First, the notion of student centered learning is explored and an outline of the challenges facing higher education today included. Second, the added value of ePortfolios is discussed. Finally, the importance of reflection for professional practice establishes the link emerging between creativity and reflection and indicates how ePortfolios are being used to enhance the assessment and feedback processes.

Student Centered Learning and Contemporary Education Challenges

Significant changes facing higher education provision in the last twenty years have affected all aspects of teaching and learning, including for the context for this study, how students engage with their studies and how learning technology is being used. Engaging students is a difficult task faced by all academics (Harper & Quaye, 2009; Heafner, 2004; Trowler, 2010). Student engagement can be defined as a "student's willingness, need, desire and compulsion to participate in, and be successful in, the learning process" (Bomia et al., 1997, p. 294). However, students often exist as passive consumers of knowledge, never fully engaging, thinking deeply, or truly understanding (Neary & Winn, 2009). A way to combat

this is to integrate active learning and appropriate assessment into the curriculum. Student engagement can be achieved by giving ownership of their learning back to the students (Biggs & Tang, 2011) and by carefully aligning the assessment methodology to their learning and future employability (Knight & Yorke, 2003). Students can take possession of their learning and view the assessment as a positive experience in which they are assessed for learning rather than the reverse.

Policies of widening participation have resulted in escalating student numbers and increasing diversity of the student population, and have been a driving force behind a heightened interest in teaching and learning (Kettley, 2007). Trow (1992) has summarized the challenges as modularization, semesterization, credit accumulation, credit transfer, franchising, and the accreditation of both prior learning and work-based learning; he suggests that all are a reflection of contemporary higher education. Significant curriculum changes, in particular shifts towards modularization and inter-disciplinarity, have been noteworthy for their impact on student learning.

Modularization, whereby teaching and learning are structured around short courses rather than over a whole academic year, has grown substantially in the past ten years (Trow, 2006). Interdisciplinarity, whereby a growing number of courses offer modules in a wide range of subject areas, happens within particular interdisciplinary degrees, such as studies in communication, peace, or culture, but also in routes through more traditionally demarcated subject areas. There has also been growth in vocationally and professionally oriented higher education courses that cross academic boundaries – for example, nursing and social work studies (Altbach, Reisberg, & Rumbley, 2009).

In recent years, many Irish degree programs, like those elsewhere, have been both modularized and semesterized. This has meant that in most cases, each topic has been packaged as a module that has been both delivered and examined within a single semester. The advantages of a modularized system have been well documented (Zahorian, Swart, Lakdawala, Leathrum, & Gonzalez, 2000): students can transfer credit easily from one institution or program to another; they can accumulate credit at a steady rate and know that they are progressing satisfactorily; and they get formative feedback at frequent intervals.

Arguments against modularization have centered on the problems of over-examining, the inhibition of individualized programs, and surface learning (Goodhew, 2002). It has been argued that because there is little chance that complex concepts have time to be absorbed or integrated into the whole way of thinking in a discipline, modularization encourages the "pigeon-holing" of knowledge and actively discourages the transfer of ideas from one area of a discipline to another. It can be argued that a lack of continuity between modules can prevent students from achieving personal transformation in their learning.

The introduction of diverse modes of curriculum delivery has been profoundly shaped by developments in learning technology (Gosper, Green, McNeill, & Phillips, 2008). The most notable shift has been away from conventional face-to-face teaching and learning modes and toward the use of computer conferencing systems and web-based materials, both as part of campus-based provision and in distance courses. ePortfolios have been held up as a vehicle for addressing the problems with current assessment practices (Chatham-Carpenter, Seawel, & Raschig, 2010). Where module-based exam assessments do not enable feedback between student and tutor because exam scripts are often inaccessible, and where students cannot readily see progress in their learning, strategically using technologies such as ePortfolios could enhance assessment and feedback.

Integrating ePortfolios across a program has also been hailed as a means to support widening participation for non-traditional learners, international students, distance learners, and learners who are work-based or engaged in continuous professional development (Joyes, Gray, & Hartnell, 2009). With the increase of numbers in higher education, managing diverse cohorts and teaching large groups has become a prime focus for lecturers. Recent JISC (2008, 2012) projects have demonstrated that using ePortfolios can help non-traditional learners identify their aspirations by goal-setting, planning, and recording evidence of their achievements. For enhancing employability skills, an emphasis has emerged in using ePortfolios to map competencies across the curriculum; having a more flexible curriculum requires us to take closer look at learning pathways, credit transfers, and multiple modes of participation.

Ultimately, the use of ePortfolios to counteract the current challenges facing the higher education curriculum is all about enhancing the learner experience (Joyes et al., 2009); given these range of challenges, developing learner networks and communities using such technology would seem a sensible way forward for educators.

Added Value of ePortfolios

ePortfolios have been identified as a suitable means for demonstrating student learning, showing connections in learning, and articulating student competencies to the world. Beetham (2006) summarizes succinctly the defining features of an ePortfolio: a collection of digital resources; evidence of

an individual's progress and achievements drawn from both formal and informal learning activities; resources that are personally managed and owned by the learner; and resources that can be used for review, reflection, and personal development planning.

Previously Tosh, Light, Fleming, and Haywood (2005) suggested that ePortfolios offer an opportunity for learner control and are capable of supporting or promoting deep learning because students are able to make connections between learning that occurs in different contexts: academic, workplace, and community. It is the recognition that learning occurs beyond the classroom that makes ePortfolios attractive to many educators. ePortfolios are thought to support learning in various settings and stages and to promote more profound forms of learning, while also supporting professional development (Gerbic, Lewis, & Northover, 2009; JISC, 2008).

Two contexts in which ePortfolios have been used are practice-based education and informal learning. Cross (2007) argues that only 10% to 15% of learning is formal, while 85% of our learning takes place outside of formal settings. Yet Attwell (2005) suggests there has been little attention paid to informal learning or to how it takes place. The real potential for ePortfolios is in the widening contexts in which learning is taking place—or is recognized to be taking place—and in their ability to bring together personal learning gained in multiple contexts. Relevant for this current study, Wild, Sporer, Chrzaszcz, Sigurdarson, and Metscher (2008) have reported on how informal learning experiences can be successfully integrated into institutional formal learning processes by using blog-based networked ePortfolios. Nettleton, Lowe, and Dorahy (2008) find substantive support for developing ePortfolios as a major tool in supporting practice-based educational programs. They can be especially useful for evaluating and documenting mastery of educational outcomes such as *practice-based* improvement and have been used in nursing and other medical programs, as well as education.

In recent years, technology has been regarded as having a potentially critical role to play in supporting and transforming creative communities at all levels and stages in the higher educational process (Craft, 2010). Diehm's (2004) research has focused on the use of electronic portfolio projects to highlight the creative nature of student learning**.** Consequently, the ePortfolio is ideally suited for developing creative abilities in students. In the context of this study, the ePortfolio is a space where connections and participation between peers can be encouraged; reflection on learning can be represented through diverse forms of multimedia; and students can demonstrate their problem solving and evaluate their own learning they progress through the program. Reflection by the students on their learning experiences forms an integral part of the ePortfolio assessment strategy, and dedicated time for reflection is critical to allow the students space to appreciate their personal development (Smith & Yates, 2011a, 2011b).

Importance of Reflection for Professional Practice

Reflective practice enables learners to "stand away" from problems arising in their studies and come to a clearer understanding (Brookfield, 1995). Using the ePortfolio, we aspired to shift, as Klenowski, Askew, and Carnell (2006) advocate, from "the collection of evidence to a focus on the analysis and integration of learning" (p. 276) across the modules of the MSc Applied eLearning programme. Research by Plaisir, Hachey, and Theilheimer (2011) and Logar, Peterson, and Römmer-Nossek (2007) suggests that ePortfolios add a further reflective layer to learning, fostering meta-cognitive reflective practice in which students look back at achievements, question assumptions, and commit to improvement and change. Similarly, Hallam and Creagh (2010) state that "the ePortfolio, as a process, allows learners to move beyond what they have learned to consider how they have learned and to understand the connections inherent in the creative process of learning" (p. 181).

Exploring the Link Between Creativity and Reflection

ackson (2006) urges higher education to play a more substantial role in supporting students as they develop an awareness of their own creativity and reflective practice is seen as a tool for developing creative abilities (Jackson, 2006; Sternberg & Lubart, 1995). Indeed, the Gibbs (1988) cycle of reflection, which involves identifying and solving a problem, draws parallels with the creative application of the imagination in devising one's own solutions to problems (Cottrell, 2003; Lowry-O'Neill, 2011; Nordstrom & Korpelainen, 2011).

Researchers on creativity agree that it is an important but complex construct (Lowry-O'Neill, 2011; Villalba, 2010). Developing creativity of students is said to prepare them "for an uncertain and ever more complex world of work; a world that requires people to utilize their creative as well as their analytical capacities" (Jackson, 2006, p. 6). Creativity involves divergent thinking skills, decision-making (Sternberg, 2006), the capacity to give many answers to a similar problem, and adaptability in dealing with challenges (Villalba, 2010). From an economic point of view, governments seek to increase creativity because it produces growth founded on entrepreneurial ideas (Villalba, 2010); and within education, nurturing of creativity leads to self-directed, motivated learners and fosters life-wide creativity (Craft, 2010).

Sternberg (2006) believes that creativity is as much an attitude toward life as it is a matter of ability and believes that students can be taught to think creatively. Being a creative individual in the learning environment takes courage on the part of the student, as risks are high when associated with assessment (Barrett & Donnelly, 2008). Nevertheless, both Nordstrom and Korpelainen (2011) and Craft (2010) assert that creativity in individuals can be fostered given the right conditions and supportive environment (Villalba, 2010).

Craft (2010) describes creativity as a social process, dependent on participation in particular kinds of communities or environments; she asserts that a creative education involves engaging with four characteristics: pluralities, playfulness, possibilities, and participation. With these conditions and characteristics in mind, we endeavored to build a learning environment for ePortfolio development that nurtured creativity and enabled learners to take risks in expressing their learning; encouraged them to connect to and participate with other students; and encouraged "play" with diverse technologies and an enthusiasm toward the possibilities of technology as a tool for learning.

ePortfolios for Enhancing Assessment and Feedback

Feedback also plays a central role in student learning (Race, 2001). According to Hughes (2011), credit is rarely given to the progress learners achieve as they make their learning journey through a program of study. She argues that ipsative feedback, which links learning between modules, is of great benefit to learners, enabling them to progress and direct themselves as learners. Hughes (2011) calls for explicit acknowledgment of that journey of progression and improvement, which in turn can increase the student's self-confidence. ePortfolio tools can be used to provide continuous and diverse forms of feedback throughout a program, enhancing and strengthening student learning. Within ePortfolio systems, peer-to-peer student feedback can also be encouraged to develop the sense of a learning community as students get a sense of their personal growth throughout the program of study. Feedback also enables students to connect their learning with their professional practice, giving them the opportunity to think critically about current practice and the possibility of making changes to their practice.

Research Aims

This research aimed to explore the holistic and meaningful aspects (Yin, 2009) of using ePortfolios with a particular group of postgraduate students, demonstrating their journey of learning within a part-time master's program. The case study approach was deemed suitable, enabling an empirical but flexible method for investigating the use of ePortfolios within this professional master's program (Robson, 2011; Yin, 2009).

As part of this case study we wanted to explore:

1. whether the students perceived that the ePortfolio had a useful purpose as part of their learning on the MSc program;
2. whether the support provided to students was helpful for developing their ePortfolios, particularly in relation to reflective practice and creativity;
3. how we could best work with future students in developing their ePortfolios.

Methodology

The Student Group and the Case

Fourteen students from the first year of the MSc in Applied eLearning participated in this study. These students are lecturers from higher education, private sector trainers, and independent training consultants wishing to develop professionally in the areas of e-learning, teaching, and training practices. Through their studies the students investigate a wide variety of eLearning topics, such as mobile learning in apprentice education, online problem-based learning for control systems engineering, and augmented reality for studying architecture. Students provided evidence of their applications of learning through the ePortfolio.

Throughout the program, students are supported in developing their ePortfolios using theoretical and practical strategies. Figure 1 illustrates the combination of strategies devised for students to foster understanding of ePortfolios and to nurture development of the ePortfolios.

Data Collection and Analysis

Stake (1995) advises that mixed methods of data collection be used to inform a case study; consequently, this study was developed by analyzing data gathered from researcher reflections, one focus group discussion (FGD), two semi-structured interviews, and student ePortfolio reflections. The flexibility of the case study approach enabled the collection of information on outcomes not known prior to the study (Robson, 2011).

Before the end of the semester, all 14 first-year students were invited to attend the FGD; only six, however, were able to participate. Subsequently, two students were interviewed. The FGD and interviews, facilitated in a semi-structured manner (Stewart, Shamdasani, & Rook, 2007), attempted to retrieve

Figure 1
Strategies for ePortfolio Development

information relating to the aims of the research while being open to any data of interest emerging from the discussions. This also provided the opportunity for students to contribute to the research and thus help generate a rich understanding of their insight into ePortfolio development.

The student reflections were analyzed using a rubric developed for this study derived from Hatton and Smith's (1995) framework, in which distinct types of reflection, each with a defining set of characteristics, are set out. These distinctions—descriptive, dialogic, and critical reflection—present indicators from which gradual development can be measured as the learner grows and becomes more aware of the process of reflection. Hatton and Smith (1995) differentiate descriptive writing from descriptive reflection and descriptive reflection from critical reflection. Similarly, Moon (2004) provides various reflective accounts that demonstrate movement from descriptive writing to critical reflective writing.

Examination of the reflections looked for examples of critical reflection and of the critical reflector, "demonstrating an awareness that actions and events are not only located in, and explicable by, reference to multiple perspectives but are located in, and influenced by, multiple historical, and socio-political contexts" (Hatton & Smith, 1995, p. 18). Thus, it was hoped that through critical reflection, the student could demonstrate deeper understanding of the learning situation by questioning and challenging underlying assumptions (Yang, 2009).

Data from the FGD and interviews were analyzed for themes, seeking information on topics set out in the general aims of the study. The rubric was used to analyze students' reflections, looking for levels of reflection evident in the student reflective commentaries. Lastly, the researcher's reflective notes were examined to cross-check notes and assumptions being made about emerging data.

The following section discusses the findings arising from the analysis and triangulation of data.

Results and Discussion

The Value of the ePortfolio

Within this study, we wanted to explore the value of ePortfolios for students' learning. Some students reported that the ePortfolio served to demonstrate their learning. One student called the ePortfolio "a record of my progress throughout the year" and described it as "a repository for my work," while another said that the ePortfolio acted as a "mirror" reflecting the student's learning. The students discussed how deadlines for continuous assessment and feedback motivated them to keep working. One student was satisfied that at the end of the academic year, she had a mature ePortfolio that she was able to use for career purposes. Another student described her ePortfolio as a revision aid for the academic year that enabled her to review the products of learning in her ePortfolio, which in turn motivated her to do more work towards completing her learning journey.

Overall, it seems that reflective writing was valued by some students: one says, for instance, that "doing the after class reflection. . . . I would be looking at how . . . what I am learning [is] impacting on the class I teach"; another remarks that

> I've never written reflective pieces before, but can see their value, as it helps me to clarify my position

> on things, or look at it from a different point of view; definitely a good thing, a good way to see progress.

The students were presented with the rubric criteria for analyzing reflection and confirmed that they believed they were reaching deeper levels of reflection in their writing. They spoke about how their reflections presented action plans and how they used the Gibbs (1988) cycle of reflection as a model to help them achieve critical reflection, thus enabling them to make action plans for their future learning. However, assessment and encouragement from the tutor seemed to be the motivating factor in getting the students to compose reflections. Students valued the opportunity that reflective writing exercises provided and suggested that in future, sample pieces of reflective writing be provided. The researcher also analyzed student reflective writing using the rubric, and while many reflections were descriptions of learning events, several pieces of writing contained critical analysis and showed evidence of evaluation and planning for future practice.

Challenges the Students Encountered in Developing their ePortfolios

The challenge of developing an ePortfolio was a recurring point of discussion amongst the students. They identified multifaceted challenges: understanding the purpose of the ePortfolio and understanding what was needed within the ePortfolio for assessment purposes; using technology for the ePortfolio; using multimedia to present information in diverse ways; and the time-consuming nature of the ePortfolio work. Overall, however, the students expressed that despite these challenges, the ePortfolio was a worthwhile endeavour; as one student commented: "It is a necessary evil! Times when I found it cumbersome, you just have to keep at it and you get better at it; I struggled with it at the beginning."

To preempt the challenges of ePortfolio development, support activities were provided for the students; they seemed satisfied with the ePortfolio induction, technical support for the ePortfolio platform, reflective writing prompts, scaffolding, and tutor feedback that they were given. However, what arose most prominently from the discussion group and interview data was the emphasis placed on support from their peer students. Learning by example from others and seeing other students' use of technology in the ePortfolio gave students an incentive to try out new things in their own ePortfolios. They claimed that opportunities provided for online peer feedback and in-class student presentations were valuable for learning from one another and for advancing their own ePortfolios. One student said of the in-class presentation:

> After a module where we had a lot of stuff to show in the ePortfolio, it was good to see how others had used the ePortfolio at that time; it was a halfway stage to get good ideas to try out for the rest of the year.

Evidence from the data confirmed that students were helping each other, problem solving their ePortfolio issues together and becoming a community of practice (Wenger, 1998).

ePortfolio Fostering Creativity

Barrett and Donnelly (2008) note that pedagogical strategies are needed to arouse the imagination and engage students and that assessment needs to be constructively aligned (Biggs & Tang, 2011) with learning outcomes that encourage creativity and reflection. Therefore, advance planning and development of appropriate activities that nurture creativity (Sternberg, 2006) by supporting collaboration, problem solving, and articulation of reflection (Gibson, 2010) were designed. As in Bolliger and Shepherd's (2010) study, activities such as student induction, peer and tutor feedback, and time for revision were devised to encourage deeper reflective practice, creativity, enhanced content development, feedback, and peer-participation.

We believe the ePortfolio is a tool that supports the creative nature of student learning, and as Diehm (2004) suggests, makes possible the representation of learning through multimedia. Cheng and Chau (2009) emphasize the potential that digital video can have for reflective practices embedded within the ePortfolios. Indeed, Bolliger and Shepherd (2010) believe that ePortfolios capture enhanced student reflection and learning through systematic storage and analysis of artifacts, thus creating an environment with authentic assessment practices. Certain activities to encourage the use of diverse technologies, such as video editing, screen casting, and podcasting were introduced to students at different points throughout the year.

Bolliger and Shepherd (2010) also report that the experience of sharing and reviewing ePortfolio entries among students resulted in additional revisions and higher quality documents. Following Craft's (2010) view that participation is a characteristic of creativity, activities were planned to develop peer-to-peer student feedback, encouraging a sense of a learning community. The ePortfolio provides suitable e-tools for supporting diverse forms of feedback, and both tutors and students were scheduled to provide feedback to

students, thus enhancing and strengthening their learning.

Students were asked if they thought that they were being creative with respect to the four characteristics used from Craft (2010), as depicted in Figure 2.

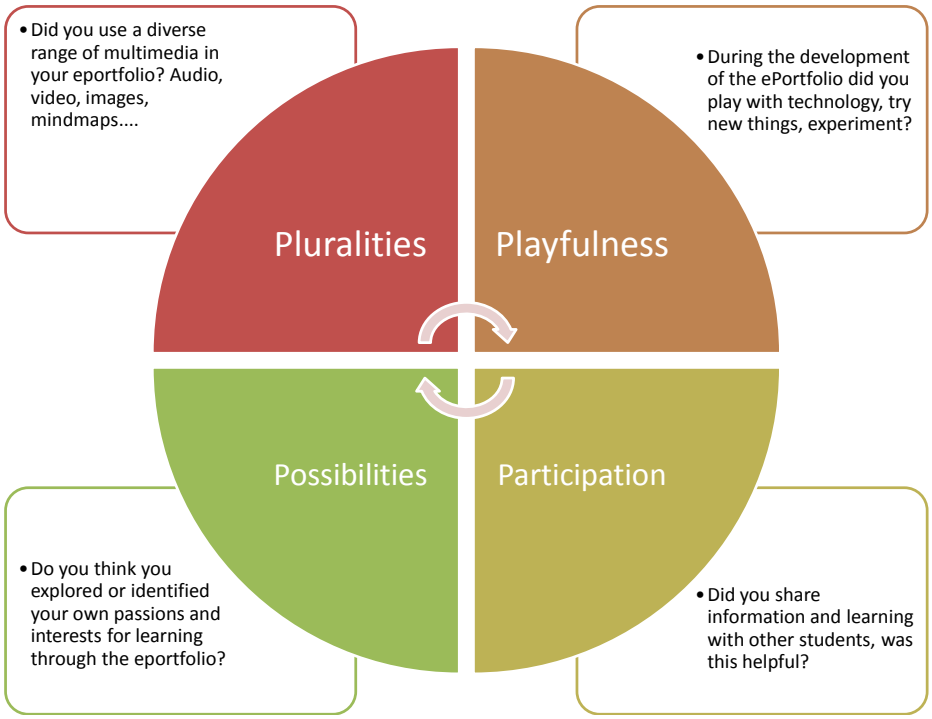
The students were able to connect their use of multimedia with the characteristic of plurality and their use of new technologies with play; they could also show convincingly that they had participated with others. Overall, however, most of the students seemed not to think of their work for the ePortfolio as creative: "I think for the ePortfolio I particularly found it hard to be creative. . . . I don't know if there is any way of inducing creativity." Further, as the student remarked, "I need to be more creative, I haven't been creative."

However, when the data from the FGD and interviews were cross-checked with student ePortfolio reflections and researcher reflective notes, it was clear that students had demonstrated evidence of problem solving with peers when using technology for their ePortfolio. Problem solving, according to Jackson (2006), is an integral aspect of creativity; however, the students' understanding of creativity seemed related solely to the visual display of artifacts, use of diverse multimedia, and layout of the ePortfolio. The term *creativity* seemed to conjure up negative beliefs about their own work; many of the students did not think that they were "being creative." Perhaps the students disparaged their own work because they had not yet formed a personal understanding of what creativity is. This is an important finding, and in the future, a critical exploration of creativity will be conducted with the students.

Suggestions for Future Changes for ePortfolio Support

Recommendations from the study suggested the need to support future students in developing their ePortfolios. Suggestions included having more multimedia and technology workshops, such as "How to do a Wordle, do a podcast, some IT training sessions, how to do a few small practical things"; providing exemplary ePortfolios; and offering greater support for reflective writing. Some students also said that more recognition should be given to the time consumed by the ePortfolio as part of the overall workload in the program. This comment has led the program team to consider increasing the number of credits allotted to the ePortfolio module.

Figure 2
Characteristics of Creativity in ePortfolio Development



Note. From Craft (2010)

Conclusion

This study considered whether the ePortfolio added value to student learning in the context of the contemporary challenges facing professional learners in higher education. While overall, the students and researcher data indicate that the ePortfolio as a tool facilitates continuous growth and learning in students, some other interesting recommendations have been made. The continuing development and transformation of suitable support activities for students developing ePortfolios will be paramount. Facilitating peer support between students will be continued and encouraged in order to nurture a community of ePortfolio students who can solve problems or issues associated with the ePortfolio together. This could be facilitated in both face-to-face and online situations. Support activities for reflective writing are needed and will be provided at various times throughout the academic year. Creativity, furthermore, is a concept that is not well understood by the students. Supports that nurture understanding of creativity and "how to be creative" will be developed for future students.

The Hunt (2011) report recommends that Irish higher education foster practices that nurture critical thinking and creativity. Craft (2010) states that by fostering creativity we enable students to challenge beliefs about learning and discover alternative modes of problem solving and knowledge creation. She also mentions, however, challenges to the effective implementation of creativity in education, including the ways in which the curriculum itself can stifle creativity. The lack of a clear definition of creativity (Batey, 2012) may also hamper the measurement of creativity within student work; it is hoped, however, that students will develop creatively by utilizing the framework of creativity used within this program, which has been influenced by Craft's (2010) definitions of the characteristics of creativity. Finally, while advocating the importance of creating an environment to support creativity, it is important to reflect on and evaluate continuously the activities that can best nurture and support a critically reflective and questioning student cohort.

References

Altbach, P. G., Reisberg, L., & Rumbley, L. E. (2009). *Trends in global higher education: Tracking an academic revolution* (2009 World Conference on Higher Education Report). Retrieved from the United Nations Education, Scientific, and Cultural Organization website: http://unesdoc.unesco.org/images/0018/001832/183214e.pdf

Attwell, G. (2005, October). *Recognizing learning: Educational and pedagogic issues in e-portfolios.* Paper presented at ePortfolio 2005 Conference, Cambridge, UK.

Barrett, T., & Donnelly, R. (2008). Encouraging students' creativity in higher education. In B. Higgs & M. McCarthy (Eds.), *Emerging issues in the practice of university learning and teaching* (Vol. 2, pp. 115-130). University College Cork, Ireland: National Academy for Integration of Research and Teaching and Learning.

Batey M. (2012). The measurement of creativity: From definitional consensus to the introduction of a new heuristic framework. *Creativity Research Journal*, *24*(1), 55-65. doi:10.1080/10400419.2012.649181

Batson, T. (2002, November). The electronic portfolio boom: What's it all about? *Campus Technology*. Retrieved from http://www.campustechnology.com/articles/39299_1/

Batson, T. (2011). Situated learning: A theoretical frame to guide transformational change using electronic portfolio technology. *International Journal of ePortfolio, 1*(1), 107-114. Retrieved from http://www.theijep.com/articleView.cfm?id=34

Beetham, H. (2006). *ePortfolios in post-16 learning in the UK: Developments, issues and opportunities in the UK*. Bristol, UK: JISC. Retrieved from http://www.jisc.ac.uk/media/documents/themes/elearning/eportfolioped.pdf

Biggs, J., & Tang, C. (2011). *Teaching for quality learning at university.* Maidenhead, UK: McGraw-Hill and Open University Press.

Bolliger, D. U., & Shepherd, C. E. (2010). Student perceptions of ePortfolio. *Distance Education, 31*(3), 295-314.

Bomia, L., Beluzo, L., Demeester, D., Elander, K., Johnson, M., & Sheldon, B. (1997). *The impact of teaching strategies on intrinsic motivation.* Champaign, IL: ERIC Clearinghouse on Elementary and Early Childhood Education.

Brookfield, S. (1995). *Becoming a critically reflective teacher.* San Francisco, CA: Jossey-Bass.

Cambridge, B. L., Kahn, S., Tompkins, D. P., & Yancey, K. B. (Eds.). (2001). *Electronic portfolios: Emerging practices in student, faculty, and institutional learning.* Washington, DC: American Association of Higher Education.

Chatham-Carpenter, A., Seawel, L., & Raschig, J. (2010). Avoiding the pitfalls: Current practices and recommendations for ePortfolios in higher education. *Journal of Educational Technology Systems, 38*(4), 437-456.

Cheng, G., & Chau, J. (2009). Digital video for fostering self-reflection in an ePortfolio environment. *Learning, Media and Technology, 34*(4), 337-350. doi:10.1080/17439880903338614

Cottrell, S. (2003). *Skills for success: The personal development planning handbook*. Basingstoke, UK: Palgrave Macmillan.

Craft, A. (2010). *Creativity and education futures, learning in a digital age*. Stoke-on-Trent, UK: Trentham Books.

Cross, J. (2007). *Informal learning: Rediscovering the natural pathways that inspire innovation and performance*. San Francisco, CA: Pfeiffer.

Diehm, C. (2004). *From worn-out to web-based: Better student portfolios*. *Phi Delta Kappan*, *85*(10), 792-794.

Duffy, K., Anthony, D., & Vickers, F. (2010). Are electronic portfolios an asset to learning in placement? *Learning and Teaching in Higher Education*, *4*(2), 90-114.

Emmett, D. (2003, November). *E-portfolios at QUT: Providing the potential for competitive advantage and a motivating learner-centred environment.* Paper presented at the OLT Conference, Brisbane, Australia. Retrieved from http://eprints.qut.edu.au/79/1/DavidEmmett.PDF

Gaynor, N. (2010). Globalising higher education: Challenges and contradictions. *Policy & Practice: A Development Education Review*, *11*, 120-126. Retrieved from http://www.developmenteducationreview.com/issue11-perspectives7

Gerbic, P., Lewis L., & Northover, M. (2009). Student perspectives of ePortfolios: A longitudinal study of growth and development. *Proceedings of the ASCILITE Conference, Auckland, New Zealand,* 327-331. Retrieved from http://www.ascilite.org.au/conferences/auckland09/procs/gerbic.pdf

Gibbs, G. (1988). *Learning by doing: A guide to teaching and learning methods*. London, UK: Further Education Unit.

Gibson, R. (2010). Points of departure: The "art" of creative teaching: Implications for higher education. *Teaching in Higher Education, 15*(5), 607-613. doi:10.1080/13562517.2010.493349

Goodhew, P. (2002). *Modularization and sliced bread*. Retrieved from http://www.materials.ac.uk/discuss/modularisation.asp

Gosper, M., Green, D., McNeill, M., & Phillips, R. (2008). *The impact of web-based lecture technologies on current and future practices in learning and teaching*. New South Wales, Australia: Australian Learning and Teaching Council.

Hallam, G., & Creagh, T. (2010). ePortfolio use by university students in Australia: A review of the Australian ePortfolio project. *Higher Education Research & Development, 29*(2), 179-193.

Harper, S. R., & Quaye, S. J. (2009). *Student engagement in higher education: Theoretical perspectives and practical approaches for diverse populations*. London, UK: Routledge.

Hatton, N., & Smith, D. (1995). Reflection in teacher education: Towards definition and implementation. *Teaching and Teacher Education*, *11*, 33-49. doi:10.1016/0742-051X(94)00012-U

Heafner, T. (2004). Using technology to motivate students to learn social studies. *Contemporary Issues in Technology and Teacher Education*, *4*(1). Retrieved from http://www.citejournal.org/vol4/iss1/socialstudies/article1.cfm

Hughes, G. (2011). Towards a personal best: a case for introducing ipsative assessment in higher education. *Studies in Higher Education, 36*(3), 353-367. doi:10.1080/03075079.2010.486859

Hunt, C. (2011). *National strategy for higher education to 2030: Report of the Strategy Group*. Dublin, Ireland: Department of Education and Skills.

Jackson, N. (2006). *Creativity in higher education: "Creating tipping points for cultural change*." Surrey, UK: Centre for Excellence in Professional Training and Education. Retrieved from http://portal.surrey.ac.uk/pls/portal/docs/PAGE/SCEPTRE/RS/PAPER%203%20DEVELOPING%20CREATIVITY%20IN%20TERTIARY%20EDUCATION.DOC

Jafari, A., & Kaufman, C. (2006). *Handbook of research on ePortfolios*. Hershey, PA: Idea Group Reference.

JISC. (2012). *ePortfolios*. Retrieved from http://www.jiscinfonet.ac.uk/e-portfolios

JISC. (2008). *Effective practice with e-portfolios: Supporting 21st century learning*. Retrieved from http://www.jisc.ac.uk/publications/programmerelated/2008/effectivepracticeeportfolios.aspx

Joyes, G., Gray, L., & Hartnell-Young, E. (2009). Effective practice with e-portfolios: How can the UK experience inform practice? *Proceedings of the ASCILITE Conference, Auckland, New Zealand,* 486-495. Retrieved from http://www.ascilite.org.au/conferences/auckland09/procs/joyes.pdf

Kettley, N. (2007). The past, present and future of widening participation research. *British Journal of Sociology of Education, 28*(3), 333-347. doi:10.1080/01425690701252531

Klenowski, V., Askew, S., & Carnell, E. (2006). Portfolios for learning, assessment, and professional development in higher education. *Assessment & Evaluation in Higher Education, 31*(3), 267-286. doi:10.1080/02602930500352816

Knight, P., & Yorke, M. (2003). Employability and good learning in higher education. *Teaching in Higher Education, 8*(1), 3-16. doi:10.1080/1356251032000052294

Logar, S., Peterson, B., & Römmer-Nossek, B. (2007). *Media competencies for tutors – A modularized course using ePortfolio*. Retrieved from http://www.eife-l.org/publications/eportfolio/proceedings2/ep2007/papers/eportfolio/media-competencies-for-tutors-2013-a-modularised-course-using-eportfolio-using-eportfolio-to-integrate-a-modularised-course

Lowry-O'Neill, C. (2011). Creativity in the classroom: From an intuitive approach to a reflective approach. *Reflective Practice*, *12*(4), 481-493. doi:10.1080/14623943.2011.590337

Moon, J. (2004). *A handbook of reflective and experiential learning: Theory and practice.* London, UK: Routledge Falmer.

Neary, M., & Winn, J. (2009). The student as producer: Reinventing the student experience in higher education. In L. Bell, H. Stevenson, & M. Neary (Eds.), *The future of higher education: Policy, pedagogy, and the student experience* (pp. 192-210). London, UK: Continuum.

Nettleton, S., Lowe, D., & Dorahy, R. (2008). Using e-Portfolios to integrate reflective practice with experiential learning in engineering teaching and learning. In J. Luca & E. Weippl (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia and Telecommunications 2008* (pp. 4746-4754). Chesapeake, VA: AACE.

Nordstrom, K., & Korpelainen, P. (2011). Creativity and inspiration for problem solving in engineering education. *Teaching in Higher Education, 16*(4), 439-450. doi:10.1080/13562517.2011.560379

Peacock, S., Murray, S., Kelly, J., Scott, A. (2011). The transformative role of ePortfolios: Feedback in healthcare learning. *International Journal of ePortfolio, 1*(1), 33-48. Retrieved from www.theijep.com/pdf/IJEP28.pdf

Plaisir, J. Y., Hachey, A. C., & Theilheimer, R. (2011). Their portfolios, our role: Examining a community college teacher education digital portfolio program from the students' perspective. *Journal of Early Childhood Teacher Education, 32*(2), 159-175. doi:10.1080/10901027.2011.572231

Race, P. (2001). *The lecturer's toolkit: A practical guide to learning, teaching, & assessment* (2nd ed.). London, UK: Kogan Page.

Robson, C. (2011). *Real world research: A resource for users of social research methods in applied settings* (3rd ed.). Chichester, UK: John Wiley & Sons.

Smith, G., & Yates, P. (2011a). Team role theory in higher education (Part I). *Training Journal*, *March*, 37-40. Retrieved from http://www.belbin.com/content/page/5021/TJ%20MARCH%202011%20p37-40.pdf

Smith, G., & Yates, P. (2011b). Team role theory in higher education (Part II). *Training Journal*, *April*, 22-27. Retrieved from http://www.belbin.com/content/page/5023/TJ%20APRIL%202011%20p22-27.pdf

Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, CA: Sage.

Stefani, L., Mason, R., & Pegler, C. (2007). *The educational potential of e-portfolios: Supporting personal development and reflective learning.* London, UK: Routledge.

Sternberg, R. (2006). The nature of creativity. *Creativity Research Journal, 18*(1), 87-98.

Sternberg, R., & Lubart, T. (1995). *Defying the crowd: Cultivating creativity in a culture of conformity*. New York, NY: Free Press.

Stewart, D., Shamdasani, P., & Rook, D. (2007). *Focus groups: Theory and practice* (2nd ed.). Thousand Oaks, CA: Sage.

Tosh, D., Light, T., Fleming, K., & Haywood, J. (2005). Engagement with electronic portfolios: Challenges from the student perspective. *Canadian Journal of Learning and Technology*, *31*(3). Retrieved from http://cjlt.csj.ualberta.ca/index.php/cjlt/article/view/97/91

Trow, M. (1992). Class, race, and higher education in America. In E. Margolis (Ed.), *The hidden curriculum in higher education* (pp. 193-212). New York, NY: Routledge.

Trow, M. (2006). Reflections on the transition from elite to mass to universal access: Forms and phases of higher education in modern societies. *International Handbook of Higher Education, 18*(1), 243-280. doi:10.1007/978-1-4020-4012-2_13

Trowler, V. (2010). *Student engagement literature review*. York, UK: Higher Education Academy.

Villalba, E. (2010). Monitoring creativity at an aggregate level: A proposal for Europe. *European Journal of Education, 45*(2), 314-330. doi:10.1111/j.1465-3435.2010.01431.x

Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge, UK: University Press.

Wild, F., Sporer, T., Chrzaszcz, A., Metscher, J., & Sigurðarson, S. E. (2008). Distributed e-portfolios to recognize informal learning. In J. Luca & E. Weippl (Eds.), *Proceedings of World Conference on Educational Multimedia, Hypermedia, and Telecommunications 2008* (pp. 5830-5838). Chesapeake, VA: AACE.

Yang, S.H. (2009). Using blogs to enhance critical reflection and community of practice. *Educational Technology & Society*, *12*(2), 11-21.

Yin, R. K. (2009). *Case study research: Design and methods*. Thousand Oaks, CA: Sage.

Zahorian, S., Swart, W., Lakdawala, V., Leathrum, J., & Gonzalez, O. (2000). A modular approach to

using computer technology for education and training. *International Journal of Computer Integrated Manufacturing, 13*(3), 286-297. doi:10.1080/095119200129911

MUIREANN O'KEEFFE graduated with the MSc degree (IT in Education) from Trinity College Dublin, where her research focused on the development of reflective practice using blogging tools. She was employed as an eLearning Developer at the University of Stirling, then held the position of National Digital Learning Repository (NDLR) Coordinator at Dublin City University, where she facilitated the development of e-learning resources and supported the growth of communities of practice among teaching academics across the Irish higher education sector. Presently she is a Learning Development Officer at Dublin Institute of Technology, coordinating the first year of the MSc in Applied eLearning and supporting the enhancement of learning through use of various technologies, including ePortfolios. She also teaches on the Postgraduate Diploma in Third Level Teaching and Learning and the MA in Higher Education.

Dr. ROISIN DONNELLY is currently Programme Chair of the MSc in Applied eLearning and the MA in Higher Education, and year two coordinator and module tutor on a number of core and elective modules on each program at the Dublin Institute of Technology. She has supervised over 20 Master's students to completion and is currently co-supervising a PhD student in Computing. She is a fellow of the UK Higher Education Academy and has a wide range of publications to date reflecting her teaching and research interests, including professional development in learning and teaching, supporting virtual communities, blended learning transformative models, active learning strategies, curriculum design, and ePortfolios.

International Journal of ePortfolio
http://www.theijep.com

2013, Volume 3, Number 1, 13-20
ISSN 2157-622X

Using ePortfolios to Measure Student Learning in a Graduate Preparation Program in Higher Education

Steven M. Janosik and Tara E. Frank
Virginia Tech

Ten second-year master's students in a higher education program participated in this study, which was designed to assess their experience with an electronic portfolio that had been introduced recently as a primary component of their comprehensive exam. This qualitative study used a focus group and long-interview methods for data collection. Participants responded to an interview protocol of several open-ended questions that allowed them to discuss their experiences and challenges with this capstone experience. Through a variety of coding techniques, five themes emerged: (a) students have difficulty adapting to change; (b) reflection and decision-making takes time; (c) students need regular reassurance; (d) students learn a great deal about themselves; and (e) the ePortfolio is a very powerful experience. Findings suggest several implications for practice, including preparing new professionals, being a new professional, and supervising new professionals.

Regional accreditors, along with other external constituents, have called for institutions of higher education to offer concrete evidence that demonstrates students are graduating with the requisite knowledge, skills, and dispositions to succeed in their chosen fields of study (Dietrich & Olsen, 2010). In fact, individuals are often asked to provide a record of their accomplishments, show progress in mastering a field, or document educational outcomes (Challis, 2005). While faculty members in all disciplines have created learning outcomes for their individual classes for quite some time, measuring the overall outcomes of academic programs has remained a difficult task.

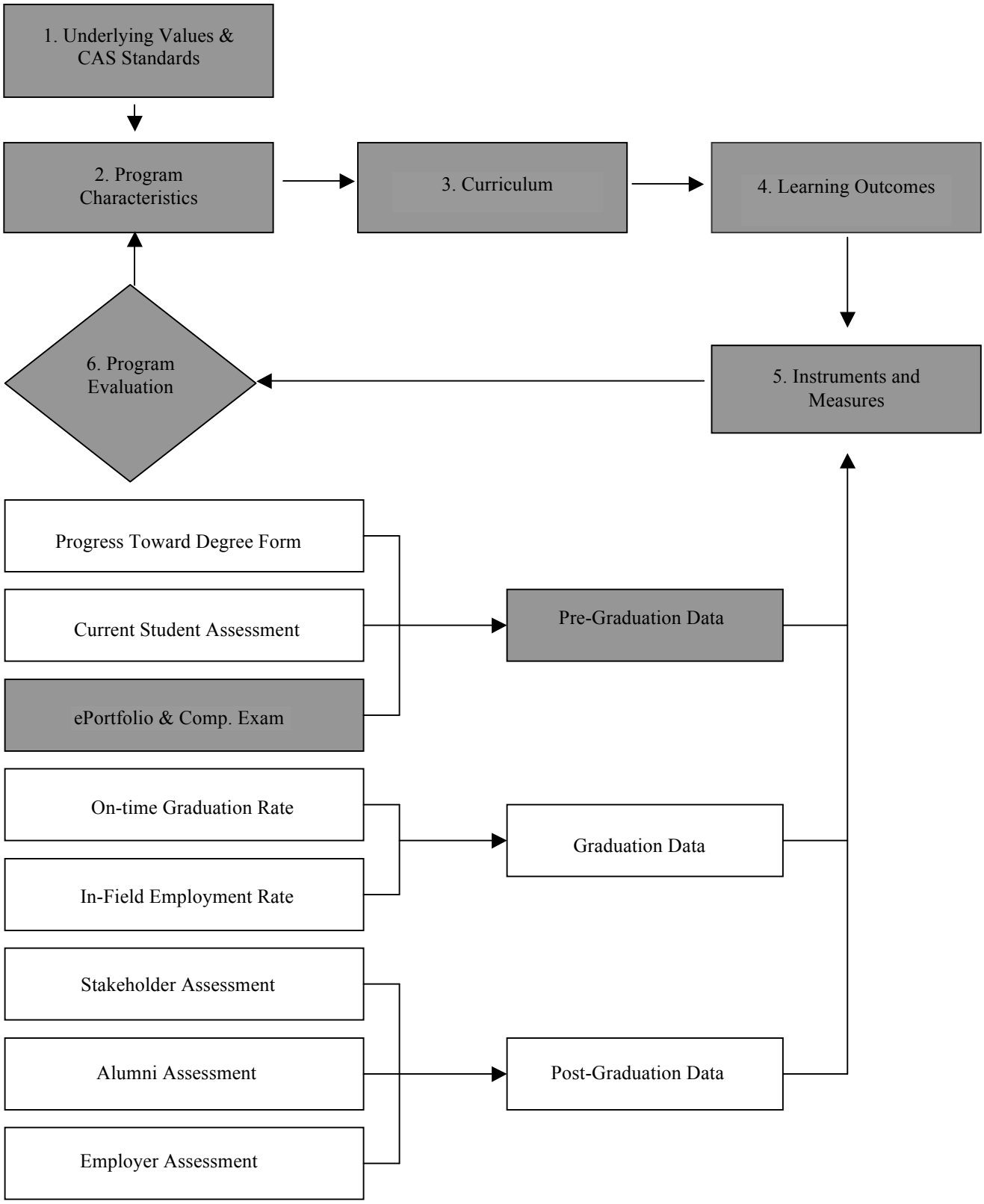
ePortfolios, a digital container capable of storing visual and auditory content, including text, images, video, and sound (Abrami & Barrett, 2005), have emerged as valuable online tool that learners, faculty members, and institutions can use to collect, store, update, and share information. ePortfolios allow students to reflect on their learning, communicate with instructors, document credentials, and provide potential employers with examples of their work (EDUCAUSE, 2005, para. 1). They can also promote professional knowledge development, professional growth, and reflective thinking and practice, all of which are important components of professional development. We hoped that the integration of an ePortfolio would strengthen the metacognitive thinking (e.g., making sense, self-assessment, reflection) of our students and facilitate higher order thinking (e.g., knowledge, understanding, application, analysis synthesis, evaluation; Wozniak, n.d.). We wanted to create a mechanism to help promote and build self-determined learning behaviors so that learning would become an integral part of life over a lifetime.

ePortfolios were introduced in 2010 as a new component of a comprehensive program evaluation and assessment program developed for a master's program at a research-intensive university in the southeast. The ePortfolio served several important purposes—developmental purposes to encourage student growth and learning, presentation purposes to help facilitate a comprehensive exam, and assessment purposes to assist with program review. The ePortfolio was integrated into a comprehensive evaluation and assessment program consisting of a six-step process that is used for continuous program improvement. While a complete discussion of the model for outcomes assessment and program evaluation goes beyond the focus of this study, the measures and instruments used to evaluate program quality included pre-graduation measures, graduation measures, and post-graduation measures (Janosik, Frank, & Hirt, 2011). Figure 1 illustrates the flow chart for the model and highlights the ePortfolio as one of three pre-graduation measures.

The goal of including the ePortfolio as the major component of our assessment program was two-fold. First, we wanted to enhance the ability of the faculty to determine whether students about to complete the program had acquired the desired knowledge, skills, and dispositions that were identified as program outcomes. Second, we wanted to create a more robust evaluation process so that students would be encouraged to reflect more deeply on their graduate experience, what they had learned, and what they could do as a result of their participation in the program.

To ensure that they would be able to develop their ePortfolios in a structured way, students received written copies of the program's objectives and learning outcomes at the very start of their academic program. Students attended periodic orientation sessions on these outcomes and the ePortfolio process. Class time was specifically devoted to discussing and developing materials for the ePortfolio. Students were constantly encouraged to develop an orientation toward *folio thinking* (Barrett, 2003), a process that includes collecting, selecting, reflecting, and connecting artifacts that represent what they have learned, the skills they

Figure 1
A Model for Outcomes Assessment and Program Evaluation for Graduate Preparation Programs in Higher Education



have acquired, or the dispositions they have developed while in the program. On the faculty side, professors integrated the learning outcomes into their course syllabi and course assignments. They also gave students constant feedback on how assignments and experiences might be used to illustrate the knowledge, skills, or dispositions learned while in the program. After the first year of implementation, faculty members involved in the comprehensive exams were very pleased and overwhelmingly positive about the results. They reported informally that students had no difficulty in translating course assignments, graduate assistant placements, and field studies into examples of knowledge learned, skills acquired, and professional dispositions developed.

The purpose of this research, then, was to address the second goal and determine whether the ePortfolio added value to the overall program evaluation and assessment plan from the students' perspective. The following research question guided this study: How did participants describe their experience with a newly created ePortfolio process as the major component of their comprehensive exam?

Method

A qualitative approach was used in data collection and analysis to explore the efficacy of newly introduced ePortfolio, which had been designed to measure knowledge, skills, and dispositions for graduating master's students in a higher education program. Open-ended questioning and grounded theory analysis were appropriate choices, since our goal was to explore the variety of experiences among a similar group of participants (Creswell, 1998). Such an approach enabled us to present the essence (Merriam, 2002) of the phenomena through the eyes of the participants. We wanted to include contextual information as well as stories of the participants from their individual points of view (Marshall & Rossman, 2006).

Participants

After obtaining Institutional Review Board approval for data collection, we selected participants using a purposeful sampling method (Patton, 2002). Twelve students participating in the ePortfolio process for the program were sent an email message inviting them to participate in a focus group exploring their experience. While all 12 students initially agreed to participate in the research process, only 10 were able to complete the interview process.

All of the participants were enrolled in nine hours of coursework and held full-time (20 hours per week) assistantships at the time the study was conducted. Their program consisted of 48 credit hours of course work, which included a minimum of two field experiences, and was located at a large public research-intensive university in the southeast. All 10 students had applied for graduation and were in good academic standing. Interviews were conducted after their exams and all course work had been completed. Six of the respondents were women and four were men. When we examined race, we found that six respondents were Caucasian, two respondents were African American, one respondent was Asian American, and one respondent was biracial.

Data Collection

Data on our participants' experience with ePortfolios were collected via a focus group and one long interview. A focus group consists of individuals with similar backgrounds participating in an interview process that encourages discussion and allows individuals to share their personal experiences in the social context of others (Patton, 2002). This focus group was used to capture the individual and group experiences of those participating in the ePortfolio process and distinguish patterns of response within the group. The facilitator of the focus group made frequent use of prompts to ensure that everyone participated and that everyone had a chance to speak before moving on to another question. The facilitator occasionally asked for clarification and would express appreciation for a focus group member's participation as a way to encourage more discussion but did not contribute any new information to the conversation. The focus group consisted of nine students who had completed the ePortfolio requirement at the time of their interview. Not all participants were able to participate in the focus group, however. One researcher conducted the focus group and a standardized, open-ended interview with one participant who was unable to attend the focus group. Although she knew the participants well, she was not responsible for grading any coursework or determining the outcome of the comprehensive exam. The participant not able to attend the group session completed an individual interview and responded to the same set of questions asked in the focus group.

To attend to the purpose of the research project, we developed several prompts to elicit information. Examples of these prompts included:

- How might the instructions and orientation about the ePortfolio process be improved?
- What was the easiest part of the ePortfolio process?
- What was the most difficult part of the process?
- What did you learn about yourself as a result of this process?
- How have you used the ePortfolio beyond the requirements for the exam?

While the interview captured only an individual's experience, common themes were found between the focus group and the individual interview.

Data Analysis

The focus group and individual interviews were recorded and transcribed. Pseudonyms were given to each student to protect the individual's identity. Content analysis was conducted by each of the researchers in an attempt to make sense of the qualitative data obtained through the focus group and individual interview. First, open coding was used. Then, axial and selective coding was used to develop emergent themes from the data (Patton, 2002; Strauss & Corbin, 1998). Finally, we used a constant comparative strategy to integrate these emerging themes into core themes.

To help establish trustworthiness by ensuring the accuracy of the data (Creswell, 1998), participants' responses were transcribed verbatim. As a measure of analytic trustworthiness, we worked independently to analyze the data and identify emergent themes. Then we compared emerging themes for congruence and dissonance (Renn & Hodges, 2007) and agreed on a set of five core themes.

Limitations

The major limitations of the study stem from the nature of the sample. Participants were drawn from one master's program. Clearly, the findings gleaned from this sample cannot represent the experiences of all master's level student affairs professionals with an ePortfolio process designed to measure the knowledge, skills, and dispositions gained in their graduate program. Additional limitations lie in data collection. Some researchers question the credibility of self-reported data (Furnham & Henderson, 1982; Howard, 1994). While there is always the chance that respondents might say things to represent themselves in a favorable light, we had no reason to believe that our participants did so. In addition, we did not perform member checks, nor was there a direct follow-up with participants to clarify or deepen their responses. Still, we believe that the findings can contribute to a deeper understanding of the utility of using an ePortfolio as the cornerstone of a comprehensive exam in a graduate preparation program.

Findings

Five core themes emerged from the data related to the research questions: (a) students have difficulty adapting to change, (b) reflection and decision-making take time, (c) students need regular reassurance, (d) students learn a great deal about themselves, and (e) the ePortfolio is a very powerful experience. After analyzing the transcripts, each researcher generated, independently, a list of potential themes. The themes outlined in this paper are a result of consultation and agreement between the two researchers.

Students Have Difficulty Adapting to Change

The ePortfolio was introduced in early October, after the start of the cohort's first year in the program. As the first cohort completing an ePortfolio, students were reluctant to accept the change in curriculum. Initially students were unclear about the value of the exercise. One student stated,

> I know when I was originally thinking about it, I was just thinking of it as kind of a glorified power point [*sic*] . . . and then I got into it and realized [there] was much more reflection [involved] than I thought.

Delia (all student names are pseudonyms) also stated that "the big picture, like what we were supposed to be actually doing, was difficult to understand." Other students indicated a preference for the options to complete theses or independent studies, which had been used as part of the comprehensive exams in past years. Interestingly, Wickersham and Chambers (2006) also found this resistance to change and preference for other activities in their study of graduate students in a secondary education program but their assessment came after only one semester of implementation.

Students also had difficulty adapting to the platform (i.e., Sakai) used for creating the ePortfolios (Sakai is called "Scholar" at the institution where the study took place). The interface was slow. Although it operated in a fashion much like Microsoft Word and used common HyperText Markup Language (HTML) commands, Sakai was reported as being less than user-friendly. Several students asked and were given permission to use other platforms. David stated that:

> If the [faculty] requires students to use Sakai, I don't know how [we] will do it . . . I feel like I need training in HTML, which is so beyond our scope . . . how would we, as education students, . . . know how to do that?

Ellen also expressed some concern by stating, "I feel like [in] Sakai [when] you make one little mistake . . . it erased the entire page I had been working on for days." Other students expressed similar frustrations. John offered a solution by suggesting,

> I wouldn't want to, as a future incoming student, be limited . . . to Sakai or . . . Google. I think [the

> platform choice] could be open to whatever because there's [*sic*] more opportunities or different venues to create an ePortfolio. I think assigning one or mandating one or requiring one would . . . limit the possibilities of where the ePortfolio could go in the future.

Students agreed generally that expanding the platforms available could encourage creativity and allow students to create an ePortfolio that used their strengths.

Reflection and Decision-Making Take Time

Throughout the students' two-year program, faculty members would remind students of the learning objectives for the program and how they could be incorporated into their ePortfolios. To help with the development of the final product, students were encouraged to upload files and make notes on a frequent basis. They were also required to enroll in a three-credit independent study as a way to focus their attention on this task. Overall, students felt that figuring out how the ePortfolio could best reflect their work and growth during their tenure in graduate school took time and significant effort. Deciding what content best described their graduate school experiences was difficult. Ann stated:

> I think the hardest thing for me was trying to decide what you were going to put in the ePortfolio because there's a lot of information you cover within two years; your cognates, academic curriculum, practicum experiences . . . deciding what's more important than others . . . was a challenge.

Putting the ePortfolio together took much more time than students anticipated. Many participants stated they underestimated the amount of time it would take to put together an effective ePortfolio. Jenny stated, after being asked what surprised her most about the ePortfolio process, responded:

> The time it took. . . I know we had all semester for this independent study but I really thought I could put this together in a couple of weeks. I found out quickly that was not the case. I was spending eight hours a day trying to put it together. I think it took a very long time to incorporate all of the information.

Students Need Regular Reassurance

During the course of the first year, one class meeting in the introductory course for the Master's program was devoted to creating the ePortfolio, another general information session was held, and two meetings were scheduled with staff members in Learning Technologies who were responsible for supporting the ePortfolio project at the institution. These staff members, under the guidance of the program faculty members, also developed a standard template for student use and a user's manual specifically for the students in the program. Despite these resources, students needed to check-in with faculty members while working on their ePortfolios. They needed regular reassurance that they were developing their ePortfolios in ways that met expectations. Several students remarked they met with faculty members individually or in small groups on a regular basis to make sure they were on the right track in creating their ePortfolio. Tom reported that

> a few of us sat down [with the faculty] . . . and said we don't know what the physical end product will look like and, I realized that might be dichotomous thinking, but that was a lot of pressure since this was basically what we were going to use to decide whether we passed or not.

Michael further noted that "[t]he hardest part of this entire thing, I think, was the ambiguity in it."

Even though there were some meetings with faculty members to determine format and expectations, students reported wanting these meetings to occur more frequently throughout the semester, as well as earlier in their graduate career. Stacy stated:

> . . . I think, at the same time, it would have been nice if it started from your first semester to say you need to start thinking about these things, you need to start cataloguing your experiences, you can track them, and then be intentional about getting experiences you don't have. I think that would have been nice to hear that first semester.

Brian stated further that "what might help the structure [the ePortfolio process] is having more frequent meetings, like once a month, and saying we expect you to have one of these tabs by now." In this case, the expectation of tabs refers to what content should be finished by a certain date. Students consistently stated that they needed more guidance regarding content expectations and tied that guidance to frequent meetings with faculty members.

Students Learn a Great Deal about Themselves

Students acknowledged that the ePortfolio process pushed them to grow and recognize how much they had accomplished during their graduate careers. Many

indicated that they had more content for the ePortfolio than they knew what to do with, and that surprised them. Students indicated that the experience that the ePortfolio provided and that evaluating that experience using the ePortfolio made it easier for them to talk about their growth as student affairs professionals, particularly in job interviews. John said, "I did find myself really reflecting in my [ePortfolio] . . . it was really helpful to me to articulate some of those things in job interviews."

Students also remarked that the ePortfolio process helped them to see the bigger picture and to understand holistically how they had learned through their graduate career. One student stated, "What I have learned in terms of my own growth was looking at big picture things and not always expecting things to be laid out for me." Jenny reported that the ePortfolio let her see "how much you have accomplished and if you had your goals written down initially . . . you can say 'I really did accomplish that or I didn't really expect to do this but I did and I am grateful now.'" Another student stated that the ePortfolio process taught her that, as a professional going into the field, she will have to craft her own experience: "for me, that's what I learned. It's a skill set. I am going to have to take responsibility for my own education and make my own experience."

The ePortfolio Process as a Powerful Experience

Despite technological glitches and initial uncertainty with the experience, students reported that the ePortfolio experience was powerful and meaningful, particularly with the job search process. Students reported going through the ePortfolio process made them feel much more competent; one student remarked that "it made me a lot more confident that I can be a meaningful contributor to the field." Several students, saying the ePortfolio was a real "confidence booster," mentioned "increased confidence" as another outcome of the process. This confidence led students to feeling strong in their interview experiences because they were able to articulate what they had learned and what they could do, as evidenced by their ePortfolio. Michelle reported:

> It helped me articulate my experience better in my interviews because you really have that time to reflect on it and connect it and frame it under those [categories of] professional preparation, professional involvement, etc. . . .You outline your values, where you plan to go in the future, etc., and all of those came up in interviews so it really helped me.

Brian, when asked how the ePortfolio process added value to his educational experience, responded:

> The ePortfolio allowed us to reflect on all of our experiences and we get to talk about what it is we have learned, how we've grown, and that's just a great experience. I think, at this point, as we are becoming a master, so to speak, in our field, that's a good opportunity to have.

Discussion

Participants were unanimous in suggesting that the ePortfolio created an opportunity to reflect deeply on their graduate school experiences. The template used as a guide in this study served to focus student attention on the learning outcomes of the master's program and gave them a mechanism by which they could easily translate their experiences into evidence in the domains of knowledge, skills, and dispositions. Despite this structure, students still needed reassurance and support as they navigated this process. This is a common theme found in other ePortfolio assessments (Mason, Pegler, & Weller, 2004). In addition, requiring students to present their ePortfolio as a major component of their comprehensive exam provided participants with an opportunity to reflect on their learning and performance as a means for further development, to construct their personal expertise, and to explore their professional identity (Rickards et al., 2008). Given the findings of this study, those contemplating the use of an ePortfolio process as part of an assessment plan would be wise to consider the following implications for practice:

1. Before considering the adoption of an ePortfolio process, develop a comprehensive assessment plan (Dietrich & Olsen, 2010). The mission or objectives of the program should drive the curriculum and the learning outcomes. Desired outcomes must be clearly articulated and reinforced by classroom faculty members as well as those who advise students and supervise field experiences. Learning outcomes and examples of evidence must be identified. Students in this study wanted clear direction on what their portfolios should include and what they should look like at the end.
2. Consider carefully the platform that will be used for the ePortfolio. While several universities have developed their own templates, free or commercially available platforms are also available (e.g., Google, Carbonmade, Wix, Krop, Design Taxi). This is an important consideration. Depending upon the complexity of the template developed and the technological sophistication of the students using the platform, computer and server capacity and speed become important factors.

Video and audio files, pictures, and complex presentations will require large amounts of both. More than one platform may be required to respond adequately to student needs (Gavaldón, García, & Campos, n.d.).

3. Construct an ePortfolio template and supporting documentation for students and faculty members based on the desired outcomes of the program. Providing this type of structure will reduce the ambiguity of the assignment and lessen the anxiety students (and faculty members) experience with any new procedure or process. Develop good exemplars of what students should expect to produce (Ring & Ramirez, 2012). Detailed guidance will also increase the likelihood that the final product will meet expectations.
4. Identify the technical support and training needs of the faculty and students. Although today's college students may possess a high level of skill with all types of technology, there may be a wide range of ability in any particular cohort. Program faculty members may not always be early adopters of technology and some may need much more help than others. Integrating an ePortfolio experience into the curriculum must be user friendly for all who use it. Resources must be devoted to continual training and nurturing of those involved in this assessment process.

   As a result of their study, Ring and Ramirez (2012) suggest that "just-in-time" training opportunities that include ePortfolio mentors for face-to-face or virtual assistance and faculty-developed prompts embedded on the tagging page that pose probing questions designed to help students make appropriate choices of work have been found to be effective. Other efforts to deepen faculty understanding and buy-in through ePortfolio workshops, brown bag lunches, and informal visits with student advisors might also prove fruitful.
5. Assess the efficacy of the ePortfolio process on a regular basis. Processes and communication can always be improved. Those who coordinate ePortfolio processes should request feedback from everyone who uses this tool on a regular, if not annual basis (Ring, & Ramirez, 2012). Use the information collected as a way to improve the quality of the final product and the learning that occurs.

Conclusion

ePortfolios provide powerful feedback to students in terms of their ability to develop and achieve learning outcomes (Pelliccione & Dixon, 2008), but they also measure higher order thinking skills, such as the ability to communicate clearly, make judgments, and demonstrate certain competencies (Miller & Legg, 1993). This is exactly what we hoped to measure and upon which our students and faculty members would focus. In the experience of the faculty members and students engaged in this process for the first time, the use of the ePortfolio enhanced our examining process and exceeded our expectations. We found the use of the ePortfolio to add great value as the foundation for our comprehensive exam. Students enjoyed the opportunity to show what they had learned and how they had spent their time in the program. The experience was quite developmental and reaffirming for all involved. That said, some familiar challenges remain. Determining the authenticity of the evidence offered, establishing consistent judging and grading of the portfolio, and addressing difficulties with the user interface are issues with which students and faculty members will have to grapple. Based on our initial assessment, we believe the rewards are well worth the effort.

References

Abrami, P. C., & Barrett, H. (2005). Directions for research and development on electronic portfolios. *Canadian Journal of Learning and Technology, 31*(3). Retrieved from http://www.cjlt.ca/index.php/cjlt/article/view/92

Barrett, H. (2003). Electronic portfolios. In A. Kovalchick & K. Dawson (Eds), *Educational technology: An encyclopedia.* Santa Barbara, CA: ABC-CLTO.

Challis, D. (2005). Towards the mature ePortfolio: Some implications for higher education. *Canadian Journal of Learning and Technology, 31*(3). Retrieved from http://www.cjlt.ca/index.php/cjlt/article/view/93

Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions.* Thousand Oaks, CA: Sage.

Dietrich, J. W., & Olson, C. (2010). In quest of meaningful assessment of international learning: The development and implementation of a student survey and e-portfolio approach. *The Journal of General Education, 59*(3), 143-158. doi:10.1353/jge.2010.0015

EDUCAUSE. (2005). *E-portfolios.* Retrieved from http://www.educause.edu/e%2DPortfolios//5524

Furnham, A., & Henderson, M. (1982). The good, the bad, and the mad: Response bias in self-report measures. *Personality and Individual Differences, 4,* 519-525. doi:10.1016/0191-8869(82)90051-4

Gavaldón, G. H., García, C. C., & Campos, M. (n.d.). Beyond a formative assessment: ePortfoios to promote autonomous, critical and reflective

students in higher education: A case study. Retrieved from http://www.academia.edu/1636564

Howard, G. S. (1994). Why do people say nasty things about self-reports? *Journal of Organizational Behavior, 15,* 399-404. doi:10.1002/job.4030150505

Janosik, S. M., Frank, T., & Hirt, J. B. (2011, November). *Walking the walk: Outcome assessment for graduate programs in higher education.* Paper presented at the 36th annual ASHE Conference, Charlotte, NC.

Mason, R., Pegler, C., & Weller, M. (2004). E-portfolios: An assessment tool for online courses. *British Journal of Educational Technology, 35*(6), 717-727. doi:10.1111/j.1467-8535.2004.00429.x

Marshall, C., & Rossman, G. B. (2006). *Designing qualitative research*. Thousand Oaks, CA: Sage.

Merriam, S. B. (2002). *Qualitative research in practice: Examples for discussion and analysis.* San Francisco, CA: Jossey-Bass.

Miller, M. D., & Legg, S. M. (1993). Alternative assessment in a high stakes environment. *Educational Measurement: Issues and Practice, 12*(2), 9-15.

Patton, M. Q. (2002). *Qualitative education and research methods* (3rd ed.). Newbury Park, CA: Sage.

Pelliccione, L., & Dixon, K. (2008). ePortfolios: Beyond assessment to empowerment in the learning landscape. *Proceedings of the ASCILITE Conference, Melbourne, Australia*, 750-760. Retrieved from www.ascilite.org.au/conferences/melbourne08/procs/pelliccione.pdf

Renn, K. A., & Hodges, J. P. (2007). The first year on the job: Experiences of new professionals in student affairs. *NASPA Journal*, *44*(2), 367-391.

Rickards, W. H., Diez, M. E., Ehley, L., Guilbault, L. F., Loacker, G., Hart, J. R., & Smith, P. C. (2008). Learning, reflection, and electronic portfolios: Stepping toward an assessment practice. *Journal of General Education, 57*(1), 31-50.

Ring, G., & Ramirez, B. (2012). Implementing ePortfolios for the assessment of general education competencies. *International Journal of ePortfolio*, *2*(1), 87-97. Retrieved from www.theijep.com/pdf/IJEP62.pdf

Strauss, A., & Corbin, J. (1998). *Basics of qualitative research* (2nd ed.). Newbury Park, CA: SAGE.

Wickersham, L. E., & Chambers, S. M. (2006). ePortfolios: Using technology to enhance and assess student learning. *Education, 26*(4), 738-746.

Wozniak, N. (n.d.). *Folio thinking: ePortfolios at Stony Brook University.* Retrieved from https://stonybrook.digication.com/nancywozniak/Folio_Thinking

---

STEVEN M. JANOSIK serves as chair of the department of Educational Leadership and Policy Studies and the program leader for the Higher Education program in the School of Education at Virginia Tech. Dr. Janosik has more than 20 years of experience in college administration. His scholarly activities focus on topics of campus crime, law and policy in higher education, liability and risk management, student conduct administration and assessment, and student development. He consults frequently on these topics and presents at national and regional conferences on a regular basis.

TARA E. FRANK is a doctoral candidate in the Higher Education Administration Program at Virginia Tech. She earned her BA and MS at Shippensburg University of Pennsylvania. She served as a student affairs professional, predominantly in student activities and leadership, at universities in New Jersey, Georgia, and Pennsylvania prior to enrolling in doctoral studies. She is currently a member of the Association for the Study of Higher Education (ASHE), College Student Educators International (ACPA), and Student Affairs Administrators in Higher Education (NASPA).

International Journal of ePortfolio
http://www.theijep.com

2013, Volume 3, Number 1, 21-37
ISSN 2157-622X

Complex Moving Parts: Assessment Systems and Electronic Portfolios

Martha J. Larkin
Walden University

Royce L. Robertson
Tiffin University, Ivy Bridge College

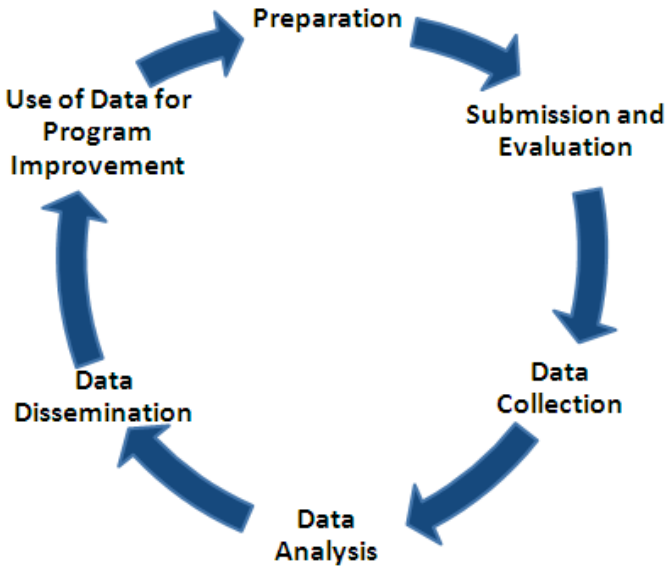
The largest college within an online university of over 50,000 students invested significant resources in translating a complex assessment system focused on continuous improvement and national accreditation into an effective and efficient electronic portfolio (ePortfolio). The team building the system needed a model to address problems met throughout the planning, design, and implementation of the assessment and ePortfolio systems. The team adopted the FEAT model to ensure that multiple stakeholder perspectives were an integral component of how the assessment system and ePortfolio development worked together. This model consisted of four domains: *functional* encompassed how the software tool worked and was used; *educational* reflected the desired learning as a result of system implementation; *administrative* included policies and procedures, financial and human resources, and planning necessary for project implementation; and *technical* included the hardware, software, and networking infrastructure necessary for ePortfolio and assessment system implementation. The researchers documented the types of problems encountered in the process, the problem solvers involved, strategies used, and actions implemented. The researchers concluded that evaluating system development is more informative if a systemic approach is used to examine the interdependent relationships among the FEAT model domains that influence the overall system maturity.

The university, a leader in distance education, has been preparing graduates in the field of education for over 40 years. This study was performed in the College of Education and Leadership, a college with over 13,000 enrolled students in 12 different degree programs and over 40 specializations (Walden University, 2012a). Degrees range from a bachelor's in educational studies to PhD programs in special education. Less than 1% of the total college enrollment is in teacher preparation programs, including the Master of Arts in Teaching (MAT), which is the primary environment used to prepare this study (Walden University, 2012b). The teacher preparation programs, including the MAT degree, are in early childhood education and special education. Also offered is an education specialist (EdS) degree in principal preparation. All programs lead to educator licensure in the State of Minnesota and are accredited by the National Council for the Accreditation of Teacher Education (NCATE). The programs are pursuing national recognition through the appropriate professional associations (Walden University, 2012c).

In 2007, the College of Education and Leadership began developing licensure programs intended to certify teachers, and in 2008 decided to pursue national accreditation. The decision to pursue national accreditation sparked the need to examine the existing assessment system, emphasizing transition points and key program assessments to measure and validate program outcomes. A discourse followed that required the institution to define the components (e.g., transition points) of the assessment system. Transition points are the milestones that occur within a program, allowing all stakeholders to determine whether the candidate is meeting the expectations that lead to graduation. For the purpose of this study, the university students in teacher preparation programs will be referred to as candidates. Key program assessments, which are components of the transition points, are standards-based artifacts (e.g., tests, projects, papers) that demonstrate the candidate's academic performance. Program outcomes and professional standards are used to guide what the candidate should know and do by program completion. Since the decision to pursue national accreditation, numerous concurrent projects related to the electronic portfolio (ePortfolio) were launched (e.g., implementation of new program assessments and transition points). The process to examine the assessment system also included due diligence to determine the best tool for the specific requirements of the college's assessment system, which included the ePortfolio. The college selected the commercial product, TaskStream, as its ePortfolio and assessment management system. The web-based application, at the least, allows teacher candidates to submit assessments to their ePortfolio for scoring by trained faculty members using valid, reliable rubrics. TaskStream also allows faculty members to manipulate data and assessment personnel to run reports necessary for data-informed discussions.

Figure 1 describes the general assessment process used by programs that lead to teacher licensure within the College (Walden University, 2010). The first step, preparation, includes the process of candidates moving through a structured curriculum that provides the defined knowledge, skills, and professional dispositions within a framework of transition points whereby progress is monitored and support, when needed, is provided. The institution's curriculum and course designers use a rigorous program and course

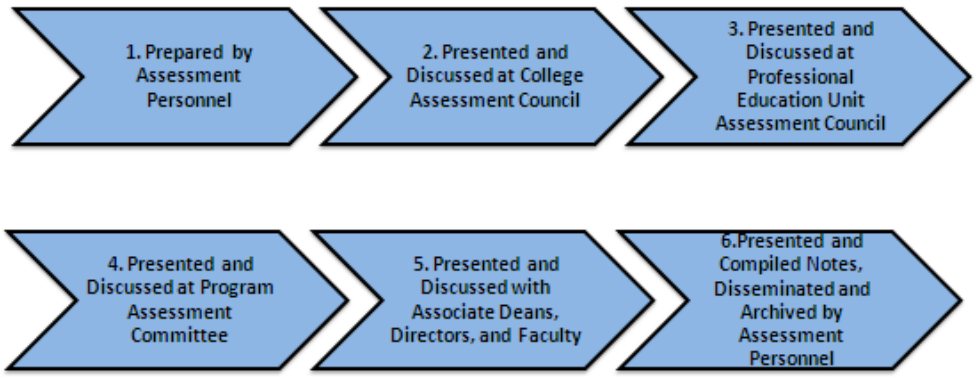
Figure 1
The Assessment Process



development process to ensure that the curriculum effectively supports what is assessed and vice versa. Faculty evaluators receive training in the use of scoring rubrics, enhancing reliability within the process. The required training, developed in the institution's learning management system (i.e., BlackBoard), is self-paced, customized by program and assessment, and facilitated by veteran ePortfolio users. The second step has two parts related to the assessments submitted by candidates and evaluated by faculty members. The first part, submission, includes candidates submitting assessments electronically to the faculty evaluator in their portfolio. The second part, evaluation, includes faculty evaluators providing detailed feedback to the candidates about their performance on assessments used to determine progress in course and program requirements. Feedback on all rubric criteria is not required; however, when feedback is provided to candidates, evaluators can copy and paste rubric language to clarify what is necessary to improve work from one performance level (e.g., acceptable) to another (e.g., target). Candidates have the opportunity to revise an assessment three times and resubmit for additional feedback and final approval. The third step, data collection, includes items collected in the ePortfolio, such as the assessments, standardized examinations, and field and clinical experience evaluations. Also used are follow-up surveys (e.g., candidate, exit, and alumni), grade point average, and course evaluations that are not part of the ePortfolio. The fourth step, data analysis, includes analysis and disaggregation from the college level to the program level. A synthesis of both quantitative data from major assessments and other sources and qualitative data from faculty members and other external groups is provided in reports generated by the assessment personnel using the ePortfolio software. The fifth step, data dissemination, includes disseminating data to appropriate groups at a defined time, thus allowing different groups to reflect on and engage in meaningful discussions about the results of data collection. Figure 2 illustrates the movement of data and reports through the required councils and committees. The sixth step, use of data for program improvement, involves time allocated to allow the major stakeholders – including faculty, candidates, and school partners – to discuss the results of data collection on a systematic basis. Feedback on major assessments is solicited, and scoring rubrics and revisions of rubrics are made as necessary. Recommendations for changes at the program or unit levels are vetted through a defined process, including the formal governance structure. All changes are documented through the formal process, as defined by the institution. The use of a cyclical model allows data to be introduced, reviewed, and revisited as improvements are implemented and determined to be effective.

Incorporating the ePortfolio into the college's complex assessment system effectively and efficiently created several challenges. To meet accreditation expectations, the assessment system must include the technological capability to construct, implement, and maintain an ePortfolio to track individual candidate

Figure 2
Data Preparation, Dissemination, and Discussion



learning. The system itself must use a technological vehicle to construct, implement, and maintain an ePortfolio for each candidate. The internal and external partners in solving this problem had to design and customize the ePortfolio to maximize positive candidate and faculty perception and intended use level. Specific barriers were overcome to operationalize the assessment system within a technological vehicle to harvest, organize, and format ePortfolio data. Barriers included the selection and implementation of a new ePortfolio system, the dismantling of a prior ePortfolio system that no longer met the needs of the institution, and rapid consensus-building amongst business and operational personnel who had little or no experience developing ePortfolio or assessment systems. Significant outreach to the partners who manage field experiences was necessary in order to design and customize the ePortfolio reports that would allow stakeholders to make data-based decisions and guide subsequent program improvement.

In the following paper, we share our three-year journey to design, implement, and mature not only an assessment system, but also the ePortfolio template used to collect, organize, and report the data collected for program recognition and national accreditation. As such, our journey is one of balancing multiple institutional forces and voices, emphasizing many of the functional, educational, administrative, and technical problems that can arise in an initiative of this scope. Our journey is one to share, for it contains insight into how to handle the complex, sometimes competing, elements of successful assessment systems and ePortfolios.

Literature Review

The purpose of this article is to describe the lessons learned from the simultaneous development of an assessment system and corresponding ePortfolio template within a compacted time frame. Within the context of the literature review, the topics studied and reviewed include ePortfolios and assessment systems as well as a model for establishing stakeholder roles and perspectives. The literature review also serves as a critical step in this study, which utilizes a development methodology.

In order to develop simultaneously an assessment system and a corresponding ePortfolio template, the assessment working group adopted the FEAT model (Robertson, 2006) to help balance multiple, competing forces within the stakeholder team. The FEAT model consists of four domains. The *functional* domain encompasses how the software tool works and how it is used (e.g., the application and its features). The *educational* domain reflects the desired learning as a result of implementing the system (e.g., teaching and learning). The *administrative* domain includes policies and procedures, financial and human resources, and planning necessary to implement the project (e.g., sustainable budgeting). Finally, the *technical* domain includes the hardware, software, and networking infrastructure necessary to implement the ePortfolio tool and the assessment system. Establishing FEAT domains ensures that multiple perspectives are an integral component of how the assessment system and ePortfolio development work together.

ePortfolios serve a critical function by providing the data to inform the assessment system. The functionality of an ePortfolio system ideally reflects process and product (Anderson & Robins, 2006; Reeves & Okey, 1996). The process involves identifying which ePortfolio requirements inform various assessment system benchmarks. The product is what the candidate creates and uses to demonstrate candidate, program, and institution learning. For the institution, this may

include regional and professional accreditation (Brickley, Schwartz, & Suen, 2000; Carney, 2004; Clarke, 2009). In order for the process and the product to be mutually beneficial, certain criteria must be addressed. First, instruments used to evaluate candidate work must be varied, valid, and reliable (Wilkerson & Lang, 2003). Second, faculty evaluators must have the ability to assess the work quantitatively and qualitatively using such instruments as rubrics and checklists (Choban, 2004). Third, the ability to manipulate the data collected to report on specific groups or timeframes allows the institution to respond to specific audiences and needs (Barrett, 2001; Oner & Adadan, 2011). Balancing the complex needs of the ePortfolio and the assessment system often comes through differentiating the outcomes of the process and the product. The use of learning outcomes is a critical measure of success and involves applying the functionality of the ePortfolio tool in a manner that meets the educational needs of the candidate, program, and institution.

ePortfolios containing candidate work and performance data assist in achieving the educational outcomes measured through the components of the assessment system. In this case, a clear purpose for the ePortfolio is critical (Barrett, 2001; Burke, Fogarty, & Belgrade, 1994, 1995) for pinpointing how the data from the ePortfolio are used to measure achievement of educational outcomes. This type of approach diminishes candidates' ability to select their own artifacts, a common benefit of ePortfolios (Barrett, 2001). However, pre-determining the artifacts makes the alignment between curriculum and assessment more thorough and coherent, which is similar to the curriculum vitae level of maturity described by Love, McKean, and Gathercoal (2004). The use of pre-determined artifacts solidifies a program's adherence to professional standards (Dorn, 2002; Ehrmann, 2004), which ideally are also aligned with the educational outcomes. Overall, a coherent design of the ePortfolio within the context of the assessment system allows the institution to determine whether an individual candidate or a related cohort have achieved the outcomes set forth by the program or institution. A common understanding of the context of the ePortfolio and assessment system must be shared among all stakeholders, including institutional administration, in order to realize fully the costs and benefits of both.

Broad and deep administrative support is necessary to craft an assessment system that is informed by a robust ePortfolio. First, the executive leadership (e.g., Vice President, Chief Academic Officer) must establish a sustainable business plan (Jafari, 2004) that commits the resources necessary for both the ePortfolio and assessment system to thrive. Second, academic and operational team leadership (e.g., Program Directors, Product Manager) must understand where and how the ePortfolio will be used to inform the assessment system and address rigorous accountability and accreditation measures (Clarke, 2009). Using this data productively for accreditation has an impact on the reputation and marketability of the institution (Levine, 2000). Third, academic leadership (e.g., Program Director) must hold faculty accountable for evaluating the candidate work in the ePortfolio, providing clear expectations and incentives for proper completion of the evaluation of candidate work without either trivializing the process or making the workload too cumbersome for faculty (Strudler & Wexler, 2008). Overall, the complexity of our online organization has allowed executive leadership to allocate fiscal and human resources to tackle problems using the best-fit decisions in which the proper teams and individuals are leading the execution of specific plans. For example, assessment personnel (e.g., one Assessment Director and one Assessment Coordinator) focus on building assets in the ePortfolio tool while Information Technology (IT) staff are assigned technical tasks such as account roles and creation processes; rarely are the roles reversed. The relationship between the technical stakeholders and others relies on the ability of each role to fulfill its commitments and inform other stakeholders of the strengths and weaknesses of various technical strategies.

Implementing ePortfolios within an assessment system requires complex technical decision making. Modern ePortfolio tools are maturing in sophistication. Their ability to disrupt the functioning of higher education classrooms (Christensen, 1997) depends on whether decision-makers can promote the variables that allow innovations to "stick" at the institutional level (Jafari, 2004). There are generally two types of ePortfolio tools, common tools and custom tools (Barrett, 2001). Common tools involve the use of everyday technology productivity tools, such as word processors, web page editors, and institutional homepage space to post static web pages that satisfy the need for an ePortfolio (Batson, 2002). Custom tools involve more sophisticated web-based database applications that may or may not be housed virtually at the institution. The database design of the custom tools allows for more robust privacy features, structured interactions with reviewers, and date-stamped feedback from portfolio viewers (Greenberg, 2003). With proper database design, the information can be harvested for use at the departmental or institutional level. Custom tools may require more institutional support and are generally more expensive. The authors recommend the use of custom tools because of the privacy and feedback features as well as large glossaries of standards (Truer & Johnson, 2003) that can be used to drive reporting capabilities. Batson (2002) specifically

refers to these types of tools as ePortfolios, which are also generally commercial software products with a global market requiring adherence to adaptability (Ittleson, 2001), flexibility, growth, and interoperability (IMS Global Learning Consortium, 2004). The institution selected the specific custom ePortfolio tool because it possessed superior privacy and interoperability along with robust reporting that can be adapted to inform specific requirements of the assessment system.

The combination of the four domains of FEAT provides for a balanced and thoughtful approach to many of the problems faced by teams charged with determining a solution. Very few large, complex projects survive without administrative support and the technical resources to launch successfully. The authors found that even when a project does launch, sustainability is difficult if the functional relevance and educational outcome are weak.

In order to create structure and ensure predictability as well as maximize efficiency, the authors adopted a developmental research approach. Richey, Klein, and Nelson (2003) described two types of developmental research in the area of media and technology. Type I research is intended to focus on a single instance of production, providing highly detailed descriptions of specific methods, including case studies. Type I research also emphasizes drawing conclusions based on context-specific models, analyzing the products and conditions. Type II research is intended to build knowledge and understanding of specific design processes rather than explore and explain a particular instance (as preferred in Type I). Type II developmental research commonly is used for model-building and includes survey research, observations, program evaluation, literature reviews, case studies, Delphi techniques, and think-aloud protocols (Richey et al., 2003; van den Akker, 1999). For the purpose of this study, Type I research will be used because of the emphasis on the design, development, and evaluation of a specific item (Richey et al., 2003).

Type I research is specific to contextual projects and designs. Specific elements of a Type I study may include the type of program being developed, the particular design processes used, the tools and techniques used in the process, and the context of the organization for which the program has been designed (Richey et al., 2003). Specifically, this research examined the development of an assessment system and a complementary ePortfolio template.

This research extends in multiple ways the scholarly conversation regarding ePortfolio implementation. First, the FEAT model provides a framework for establishing a balanced and knowledgeable implementation team. Second, the assessment process and data diagrams describe tangible outcomes associated with collecting and discussing the data. Third, the methodology and timeline articulate specific actions and milestones necessary for successful implementation. Overall, the addition of this work in the scholarly conversation will help fellow adopters implement assessment systems and ePortfolios with greater clarity and collaboration.

Methodology

The design of this research represents formative approaches to the developmental methodology. The developmental method suggested by van den Akker and Plomp (1993) has a two-fold purpose. First, developmental research tends to support the development of prototypical products, including empirical evidence of effectiveness. In this study, the products include the assessment system and the ePortfolio template. Second, the developmental method tends to generate methodological directions for the evaluation of such products. In this study, the design teams met several times to evaluate the products as they evolved. This research involved studying the whole process and specific parts of the ideal assessment system and an ePortfolio used to inform it. The instructional components of this process and the subsequent products were designed as a result of the research. As a result of this study, new knowledge was created about the design of the assessment system and ePortfolio template, their development, and their evaluation (Richey et al., 2003). The overall design of the research was to explore, explain, and design (Gibbons & Bunderson, 2004) an assessment system and ePortfolio template that is specific to the institution's needs and outcomes.

To develop the product described in this study, the following procedure (Figure 3 and Table 1) was used. First, a thorough literature review was conducted, including both professional and academic resources. The search primarily focused on assessment systems and processes, teacher education and its accreditation environment, and the design and content of ePortfolios. Institutional documents, such as the existing assessment plan, were used to identify and define the assessment system, including guiding principles, best practices, standards alignments, transition points and major assessments, support systems, and assessment resources.

Second, a formative group of stakeholders was convened. This internal committee consisted of various academic, assessment, business, and leadership representatives (e.g., Program Directors, Field Experience Coordinators, and Assessment Director). These individuals were chosen because they represented the highest level of institutional intelligence about assessment systems and the ePortfolio. One of the

Figure 3
Methodology

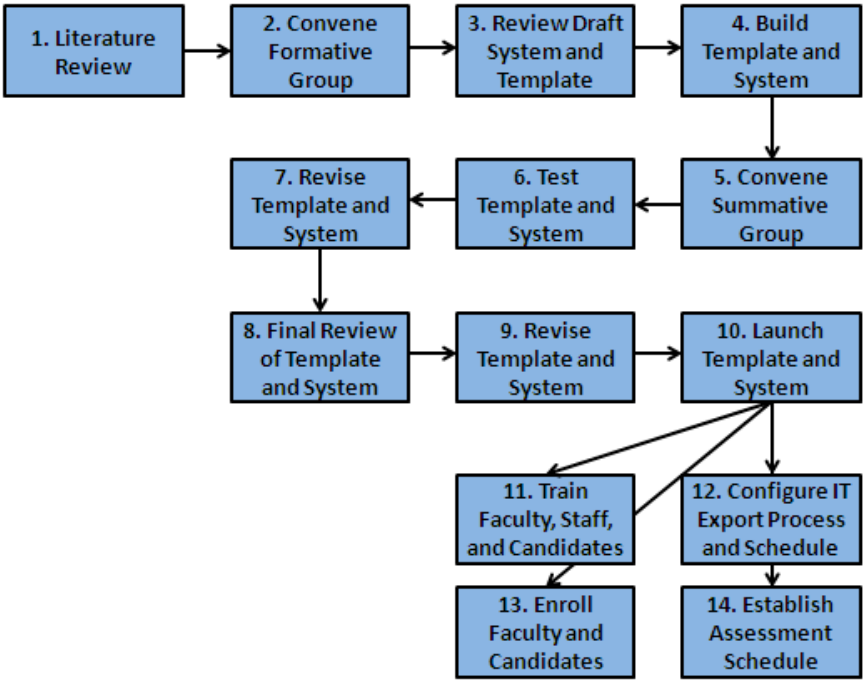


Table 1
Methodology Summary

Step No.	Title	Outcome
1	Prepare Literature Review	Determine existing research and institutional information.
2	Convene Formative Group	Translate the existing requirements and guidelines into assessment system and ePortfolio.
3	Review Draft System and Template	Provide feedback for revision.
4	Build Prototype Template and System	Construct real and technological components.
5	Convene Summative Group	Evaluate the revisions to the ePortfolio template.
6	Use Feedback to Revise Template and System	Make changes based on feedback.
7	Test Template and System	Determine if all components of template work properly.
8	Complete Final Review of Template and System	Provide feedback for revision.
9	Revise Template and System	Make changes based on feedback.
10	Launch Template and System	Start using ePortfolio and collecting data.
11	Enroll Faculty and Candidates	Add faculty as evaluators and candidates as ePortfolio owners.
12	Train Faculty, Staff, and Candidates	Provide written and live instruction on the components and use of the systems.
13	Configure IT and Export Process and Schedule	Ensure reliable data passage from one system to another.
14	Establish Assessment Schedule	Determine calendar for when assessment data will be discussed.

roles of the formative committee was to translate the existing requirements and guidelines regarding the assessment system into an ePortfolio structure and operation. The commitment of the formative committee included weekly teleconference meetings and individual work time spanning a multi-year time frame.

Third, an initial review of the draft assessment plan and ePortfolio template was performed by the formative group. A series of open-ended questions was used to determine whether or not the title, purpose, and order of the ePortfolio requirements matched the assessment system process.

Fourth, a prototype ePortfolio template was developed based on input from various sources. Each requirement within the ePortfolio template was matched to an evaluation method, such as a rubric, and mapped to specific institutional, state, national, and/or professional standards. Each evaluation method also was assigned a frequency based on how often it needed to be reported.

Fifth, the formative group was reconvened as a summative group to evaluate the revisions to the ePortfolio template. The role of the summative group was to provide feedback and/or approval of each individual requirement in the ePortfolio template.

Sixth, a series of questions related to the content and design of the project was developed to guide the summative group in providing feedback. The questions solicited feedback on titles, structure, order, and formatting. The group also provided comments on the evaluation methods and standard alignments associated with the major assessments.

Seventh, the summative group met via web-based conference to test the template with sample candidate and faculty evaluators. The sample candidate account was used to enter fictitious work, and the sample faculty account was used to evaluate the submissions. This step provided validation that all parts of the ePortfolio template were working properly. Sample reports also were generated to illustrate completion of assessment system requirements.

Eighth, in order to complete the final review of the template and system, feedback from the summative group on both the ePortfolio template and the assessment system was analyzed and compiled. Comments specific to content were analyzed for pertinence to the development of the template and the system. Comments specific to design were analyzed for feasibility. The analysis of this data also was used to provide further refinement to the ePortfolio template and the assessment system.

Ninth, to triangulate data from the committees and the institutional document review, the ePortfolio template was reviewed by the other members of the assessment staff and by representation from the ePortfolio vendor. The other assessment staff provided feedback on comparability and interoperability with other institutional ePortfolio templates. The vendor representative provided guidance on efficient use of the product, including building individual data points that could be aggregated later for use with the entire assessment system.

Tenth, revisions were made to the template based on input from the assessment staff and vendor. Pertinent content and feasible design revisions compiled in steps eight and nine were integrated into the template. A revised assessment system and final draft of the ePortfolio template were launched.

Once the tenth step had been completed, a series of subsequent steps were launched related to supporting and extending the use of the assessment system and the ePortfolio. Eleventh, the assessment personnel were allowed to enroll faculty, staff, and candidates in the ePortfolio. Twelfth, the following stakeholders were provided training specific to their role in the process:

- Candidate technical support staff were trained to solve or escalate technical questions.
- Faculty were trained on the assessment system and the ePortfolio template, including evaluation methods (faculty members are not allowed to score assessments and be compensated without having completed the training).
- Program directors and field experience staff were trained to use the system to check for submissions, evaluate transition point requirements, and generate reports.

The authors noted that training ideally would occur before faculty and candidates gained access to the ePortfolio; however, the implementation timeline overlapped in such a manner that training prior to enrollment was not feasible. Also, the following tasks were performed as part of the launch of the ePortfolio:

- Thirteenth, the IT team aligned each assessment placeholder with an associated requirement in the student (candidate) information system used to track progress on the degree audit.
- Fourteenth, the assessment staff planned a detailed calendar of when assessment data would be harvested from the ePo16rtfolio, formatted into coherent data presentations, and disseminated to appropriate assessment committees for discussion.

Types of Problems

Figure 4 describes four general types of problems that have occurred in the process of designing the assessment and corresponding ePortfolio. These problems have been classified according to the FEAT domains (Robertson, 2006).

Functional

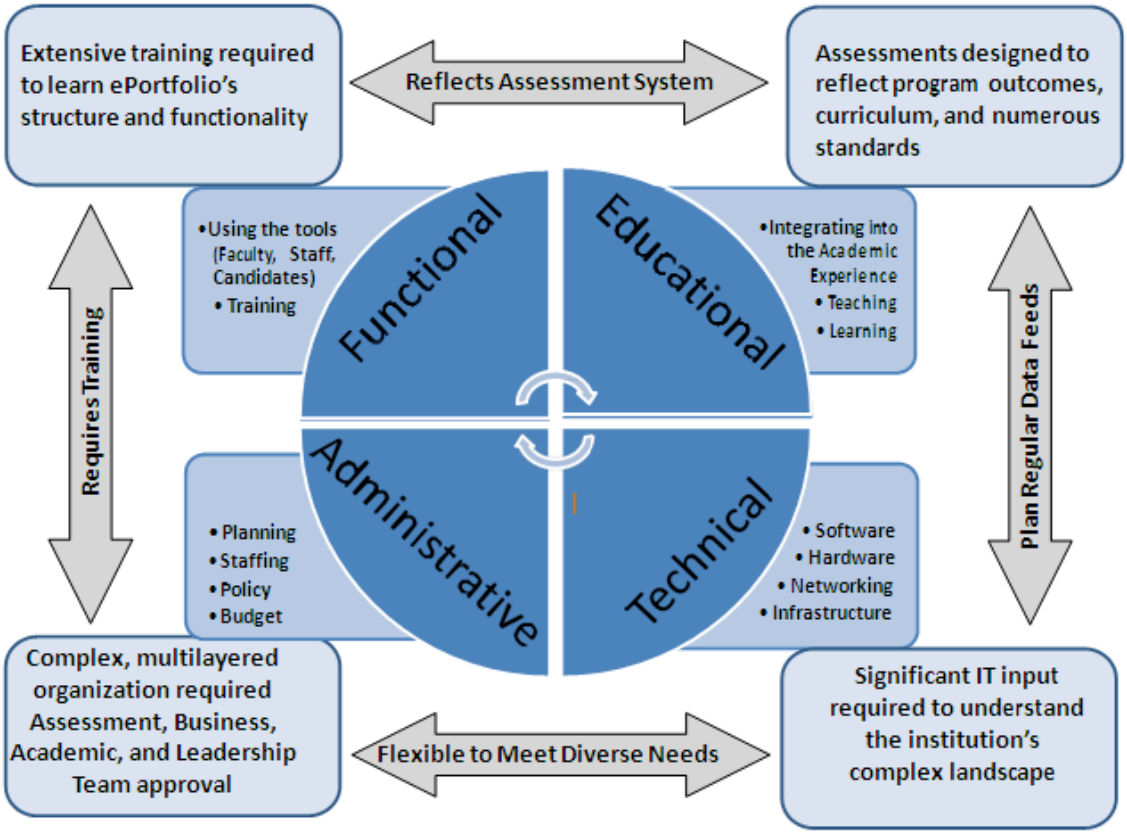
All groups within the organization needed basic knowledge of the ePortfolio and its functionality. Translating a paper-based portfolio into an electronic one revealed several functional issues: scoring choices for evaluators using rubrics and design and use of forms used to track eligibility and performance at field experience sites.

- Scoring choices for evaluators using rubrics: Software options and settings have the ability to exclude evaluators from awarding partial point scores. The system was designed to allow only whole number scoring choices offered to the evaluator in a pull-down menu.
- Design and use of forms used to track eligibility and performance at field experience sites: The original forms, which were very well-organized word processed documents, lost their complex formatting to achieve a simple, linear look and feel. Therefore, translating the form to the ePortfolio template took more time than expected. Some stakeholders also preferred the original word-processed version for aesthetic reasons.

Educational

A significant educational problem existed due to the numerous standards and outcomes that the assessments are used to measure. To address this problem, the stakeholders used functionality – called "tagging" – within the ePortfolio tool to manage all of the standards and outcomes. Tagging is the process of associating specific rubric criteria (rows) with a variety of standards and/or outcomes. Once a rubric row is tagged, it is possible to report the data associated with all rubric rows tagged to determine the degree to which a standard or outcome has been met by individual

Figure 4
FEAT Diagram



candidates or cohorts. For example, major assessments in the program use a rubric criterion related to the skill of "selecting and using informal assessment." The knowledge and skills related to this rubric criterion are aligned with various standards and outcomes. Numerous conditions influenced the decision to use tagging as a strategy to track how candidates performed at the skill of selecting and using informal assessment.

- At the *institutional* level each criterion is aligned with program-level learning outcomes, college-level learning outcomes, and the college's professional education unit outcomes that relate to assessment.
- At the *state* level each criterion is aligned with Minnesota assessment-related standards including the Standards of Effective Practice, Core Standards for all Special Educators, Standards for Special Educators: Emotional Behavioral Disorders, Standards for Special Educators: Learning Disabilities, and the Standards for Early Childhood Educators.
- At the *national* and *professional* levels, each criterion is aligned with assessment-related standards within the Council for Exceptional Children (CEC) Common Core, Emotional Behavioral Disorders, and Learning Disabilities, as well as the National Association for the Education of Young Children (NAEYC), and the National Council for the Accreditation of Teacher Education (NCATE) program standards.

Administrative

A significant administrative problem existed with the various levels of approval (i.e., IT, assessment, academic, and business) of a multi-layered, complex organization. Because of the highly integrated nature of the systems, even seemingly insignificant changes triggered a domino effect of system adjustments requiring the leadership from various teams to concur on changes before they happened. For example, for each ePortfolio there are various placeholders where assessments are submitted and evaluated. After an assessment is evaluated by a faculty member, the score is submitted to the administrative record. The content of the administrative record is exported from the ePortfolio system and imported into a table in the student (candidate) information system. This export-import process occurs on a weekly basis. After the information is imported, various staff members in the Registrar's Office use the data to determine whether candidates have completed all of the requirements necessary to graduate (i.e., degree audit). The following scenarios illustrate how system-level changes required a proactive approach from team-level leadership.

- If any problems occurred with the export-import process, or if the process failed, degree conferral was impacted. Any problems with the import process required the directors of several academic, technical, and business teams to hold spontaneous meetings to resolve issues.
- If the name of a placeholder or the source template undergoes name changes or other revisions, the linkages of the export-import process are broken and must be rebuilt. It was determined that name changes required a lock-step pattern of communicating any changes from academic to assessment to IT to business leaders to make system adjustments. In order to manage the process and reduce faulty data, the administrative stakeholders suggested and implemented a form to describe and manage changes. The use of this form mirrors the steps required to edit the template and adjust the export and import process, thus lending accountability to the entire process.

Technical

Significant technical problems needed the attention of the IT staff. For example, the integration of the student (candidate) information system and the ePortfolio allowed the data to be stored in the institutional data warehouse, thus allowing the data to be integrated into the institutional reporting scheme. Before the institution could rely on these reports for making institutional resource decisions, the IT staff had to design and build reliable reporting mechanisms. Members of the IT staff met with assessment and academic staff to determine reporting needs, including the demographic fields needed for filtering and disaggregating data. The outcome of the consultation was to create a library of reports related to specific aspects of the assessment process. A specific, critical report takes data from the ePortfolio and combines it with course rosters to determine which candidates have completed the assessment. This report had widespread positive impact for multiple reasons.

- The information in the report allowed staff to monitor course sections and cohorts to determine the submission and completion rate for a given assessment.
- Due to the nature of the institution, this report was necessary to track the work of

adjunct faculty who may or may not know all of their specific responsibilities.
- Since the assessments are submitted during a specific course but are not necessarily a course requirement, this report allows academic and assessment personnel to track submission and cohort completion.
- The programs range in size from dozens to thousands of candidates, so technical solutions that make data more accessible improve productivity.

The four areas of FEAT are interdependent and often require a team of diverse professionals to resolve problems in order to reduce the chance that one particular lens—functional, educational, administrative, or technical—is exerting too much influence on the problem-solving process. The use of the FEAT domains allows the program leadership to balance the roles and perspectives of the teams assigned to solve specific problems in the development of the assessment system and ePortfolio template.

Problem Solvers

The decision to pursue accreditation and implement the assessment system and ePortfolio had broad representation throughout the university and college. Throughout the process of developing the assessment system and ePortfolio, the institution's Project Management Office was charged with the task of making, managing, and monitoring the actions and outcomes of every team engaged in the accreditation process. In the functional domain, the Office of Field Experience collaborated on the development of the components of the ePortfolio related to what candidates experience in school classrooms and other types of educational settings. The Assessment Directors and Coordinators developed the ePortfolio template, participated in rubric development, and anticipated the types of reports needed from the ePortfolio. Faculty members participated in training and also engaged in rubric development and evaluation of candidate work. The Student (candidate) Support Team developed multiple resources used for training candidates to use the ePortfolio and answered numerous questions via telephone and web-based help. In the educational domain, the Program Directors provided leadership in the development of the transition points, key program assessments, and accompanying rubrics. In the administrative domain, the president of the university and vice president of the college provided direct (e.g., financial) and indirect (e.g., professional development) support necessary to implement the assessment system and develop the ePortfolio. The dean provided academic leadership and oversight on the accreditation process. The associate deans facilitated working groups including academics, assessment, and administrative representatives. In the technical domain, the following was accomplished. Operational teams, such as IT, designed the infrastructure necessary for efficient account creation, etc. The vendor (TaskStream) provided technical and design training and consultation as needed. Overall, 500 candidates used the ePortfolio in licensure programs that certify teachers, and over 13,000 candidates used it throughout the college.

Problem Solving Strategies

Once the team, consisting of a balanced representation of the FEAT domains, was assembled, the following strategies were used to address the problems identified as the assessment system and ePortfolio were developed.

Collaborate to Find Solutions

Collaboration was a primary method of solving problems. Many existing teams, such as the academic leadership for each program, were used as platforms to discuss problems and seek direction. New teams also were developed to respond to emerging needs. For example, the assessment team, which began as one individual, has grown to eight people to meet the demands of assessment, accreditation, and the ePortfolio. As new teams emerged, so did new methods of addressing problems collaboratively through shared responsibility. In many cases, when a problem arose, the owners formed a meeting to discuss and plan how to solve the problem. The appropriate actions were arrived at through consensus. The assessment team, assigned the task of developing the ePortfolio, constructed a prototype of how the ePortfolio would be configured to respond to the problem. Changes were tracked using internal forms. Then, multiple remote employees convened on a conference call to review the prototype and test its use. Various team members selected specific areas of the prototype to review in depth. Once all functionality of the prototype was revised and agreed upon, the assessment team built the active version in the live ePortfolio template. Other stakeholders then implemented plans to communicate the changes through coursework, e-mail, and announcements in the ePortfolio tool.

Use Technology Effectively to Develop and Implement the ePortfolio

Another method of working toward solutions has been the effective use of technology. For example, application sharing and web-based meetings have been used to conceptualize, complete, and review many of

the detailed steps in the development of the ePortfolio. For example, multiple stakeholders reviewed ePortfolio components to ensure that the design and content were ideal for the purpose. In many cases, the component of the ePortfolio was best reviewed by the office or team responsible for implementing the component. In the case of field experience applications and evaluations, the Office of Field Experience staff was charged with reviewing the functionality of the components.

Pilot to Ensure Accuracy and Reliability

A third method of working toward solutions, piloting, has been used to various degrees. Whether as proof of concept or trial-and-error testing, to ensure accuracy and reliability various members of the team have developed prototypes for the working parts of the ePortfolio. When a form or evaluation instrument was deployed, it was first built and tested in a controlled environment. In one case, a field experience placement form had to be translated from its complex word-processed format into a form used in the ePortfolio. Many stakeholders liked the organization of the word-processed form; however, it did not allow for easy, efficient aggregation, thus limiting the ability to make data-informed decisions about placements and supervision. Ultimately, the visual appeal of the word-processed document was forgone in favor of the simple ePortfolio form, which allowed for more efficient use of data.

Respect Complexity to Understand and Rebuild the System or Process

The final method, respect for complexity, has allowed the team to address problems by breaking down the components of the system or process and rebuilding it in a manner that works within the ePortfolio tool. For example, at one time the entire field placement process worked through word-processed forms delivered via e-mail. The team accepted the challenge of dismantling the complexity of the process and rebuilding the forms in the ePortfolio to create a new and innovative model for managing field placements. All of the aforementioned methods would not be as effective without a solid relationship with the ePortfolio vendor, where suggestions could be made freely in order to enhance the product and make the institutional operations more efficient. The vendor understood the complexity of the work being completed and made gradual improvements to address the needs. The use of practical meetings and team management strategies supports future steps in the process, including specific actions used to address problems and move the project closer to completion.

Actions

As a result of implementing the steps in the methodology, the following actions were taken. Each action was categorized according to the FEAT domains in order to assess the balance of perspective and workload occurring with any given phase of the project. Table 2 summarizes the actions.

Early in the process, proposed actions were conceptual in nature and balanced among FEAT domains. Between July 2009 and December 2009, the following tasks were accomplished. Most important, in the educational domain, the heart of the assessment system – the transition points and major assessments – were conceived, defined, and approved for each program. This work was led by the administrative action of hiring the first program assessment coordinator, who would eventually become an assessment director after an organizational change. These two tasks enabled the technical action of building, testing, publishing, and piloting the ePortfolio templates for all programs involved. Finally, once all of the educational, administrative, and technical tasks were completed, the assessment staff was able to begin preliminary faculty training on the transition points and major assessments.

The next phase, spanning from January 2010 through June 2010, involved finalizing the ePortfolio aspects of the assessment system for candidate work and data collection. All of this work was bolstered by the administrative action of hiring a program assessment coordinator to support the director. In the educational domain, the major assessments were written, edited, aligned with various standards, and approved for each program. These tasks enabled several technical actions. First, all forms used for field experience were developed, tested, and implemented in the ePortfolio. Second, all requirements in the ePortfolio templates were completed and reviewed for accuracy. Third, all components of the assessment system necessary for tracking candidate progress were mapped for regular exporting from the ePortfolio to the student (candidate) information system. Once all of the educational, administrative, and technical tasks were completed the assessment staff was able to begin continued faculty training on the major assessment rubrics, field experience forms, and the ePortfolio template layout.

The following phase, spanning from July 2010 through December 2010, involved the first candidate work and data collection cycles. All of the data collection work in this phase was used for the administrative action of submitting data reports for national accreditation. In the educational domain, the first major assessments were submitted by candidates to the ePortfolio and evaluated by faculty assessors; the

Table 2
Timeline and Actions Organized by FEAT Domains

Timeframe	Major Tasks with FEAT References
July 2009 – December 2009	F: First faculty training E: Transition points defined E: Major assessments conceived and approved A: First assessment coordinator approved and hired (Later became assessment director) T: ePortfolio template built, tested, and piloted
January 2010 – June 2010	F: Second faculty training E: Major assessments and rubrics completed and approved A: Second assessment coordinator approved and hired T: Field evaluation forms built and tested T: Program ePortfolio built, piloted, tested, and approved T: Export to student information system mapped and tested
July 2010 – December 2010	F: Field evaluation faculty training and support F: First cohort field evaluation forms submitted E: First major assessment data harvested and discussed A: National recognition reports approved and submitted (SPA) T: Export to student information system implemented
January 2011 – June 2011	F: Field evaluation faculty training and support F: Second cohort field evaluation forms submitted E: All Major assessments submitted once each, data harvested and discussed A: National recognition reports approved and submitted (SPA) T: Export to student information system continues
July 2011 – December 2011	F: Field evaluation faculty training and support continues E: Refine ePortfolio requirements E: All major assessments submitted twice each, data harvested and discussed E: First program completers in new assessment system A: National recognition reports revised (SPA) T: Export to student information system continues
January 2012 – June 2012	F: Field evaluation faculty training and support continues E: Refine ePortfolio requirements E: All major assessments submitted three times each, data harvested and discussed E: Second program completers in new assessment system A: National recognition reports revised (SPA) A: Accreditation visit completed and recognition achieved T: Export to student information system continues

Note. Robertson and Larkin (2011)

data then were harvested by the assessment staff. The field forms also were submitted and harvested for the first time. Next, assessment staff members continued the functional tasks of faculty training to assess candidate work using the rubrics in valid and reliable ways. After the first submission of data was complete, the technical task of exporting data from the ePortfolio to the student (candidate) information system continued.

As the implementation continued from January 2011 through June 2011, the actions focused on refining the major assessments as they operate within the assessment system. All of the data collection work in this phase also was used for the administrative action of submitting data reports for national accreditation. In the educational domain, the major assessments were submitted by candidates to the ePortfolio and evaluated by faculty assessors; the data then were collected by the assessment staff for the second time. The field forms also were submitted and harvested for the second time. Next, assessment staff members focused the functional tasks of faculty training by collaborating with other offices to train field faculty members who assess candidate teaching in field. After the second submission of data was complete, the technical task of exporting data from the ePortfolio to the student (candidate) information system continued.

From July 2011 through December 2011, the actions continued to focus on refining the assessment system and assessments the after the third cohort was complete. All of the data collection work in this phase

was also used for the administrative action of submitting data reports for national accreditation. In the educational domain, the major assessments were submitted by candidates to the ePortfolio and evaluated by faculty assessor; the data were harvested by the assessment staff for the third time. The field forms also were submitted and harvested for the third time. Next, assessment staff members focused the functional tasks of faculty training by collaborating with other offices to train field faculty members who assess candidate teaching in the field. After the third submission of data was complete, the technical task of exporting data from the ePortfolio to the student (candidate) information system continued.

From January 2012 through June 2012, after the fourth cohort was complete, the actions continued to focus on refining the assessment system and assessments. All of the data collection work in this phase was also used for the administrative action of submitting data reports for national accreditation, which culminated in February 2012 with a successful site visit (notice provided as of April 2012). In the educational domain, the major assessments were submitted by candidates to the ePortfolio and evaluated by faculty assessors; the data then were harvested by the assessment staff for the fourth time. The field forms also were submitted and harvested for the fourth time. Next, assessment staff members focused the functional tasks of faculty training by collaborating with other offices to train field faculty members who assess candidate teaching in the field. After the fourth submission of data was complete, the technical task of exporting data from the ePortfolio to the student (candidate) information system continued.

Findings

The actions of the study led the researchers to the following findings about the simultaneous development of assessment and ePortfolio systems. They found that evaluating system development is more informative if a systemic approach is used to examine the FEAT model domains. The domains—functional development, educational connection, administrative support, and technical infrastructure established—have interdependent relationships that influence the overall maturity of the systems.

As new tools were adopted, functional problems were treated as teaching opportunities. In this case, multiple layers of training needed to be addressed. First, the staff developing the assets with the ePortfolio needed skill development with the application. This included frequent web-based training with the product vendor as well as informal communities of practice for sharing new learning. Second, the faculty members needed training in three areas: the assessment system, the ePortfolio tool, and the process of evaluating the assessment submissions. The training on the assessment system contained information about the process of assessment, key definitions, transition points, assessment requirements, and remediation plans. The training on the ePortfolio tool included authentication, navigation, locating candidate work, using rubrics and feedback mechanisms, and managing the revision process. Training on the process of evaluating the assessment submissions included describing each assessment, addressing all of the standards, analyzing comments and qualitative feedback, determining the rubric score, and submitting the evaluation. There also was a special section of the training that focused on eliminating bias, reducing ambiguity, and increasing accuracy and fairness in the scoring process. After completion of the training, the issues that surfaced included:

- Compensation. Fifty dollars was provided for an intense training intended to last four hours. Comments were shared that many individuals did seven to eight hours of work and that one hundred dollars would have better represented the amount of time spent.
- Ownership. The assessment personnel planned and delivered the first two training cycles; however, academic leadership determined that academic program directors would be the more ideal point persons. The third cycle of training would be led by the program directors, with consultation and guest facilitation from assessment personnel.
- Corroboration. It was determined that more candidate samples were necessary to have a positive impact on any norming exercises.
- Documentation. Academic leadership charged program directors with documenting which faculty have been trained and with assigning any and all evaluator tasks only to those who have been trained.

Collecting data throughout the program ensures that tracking progress can occur objectively. Currently, one of the common notions of best practice in assessment includes using a variety of methods that are strategically distributed across the learning experience. This can be difficult in compressed programs or ones in which the conventional wisdom involves putting more assessments at the end of the program for fear of candidates not performing as well when they are less experienced with the knowledge and skills. In this case, transition point requirements were classified in three categories: administrative, academic, and field-based requirements. Once all of the requirements were juxtaposed in the ePortfolio template, a distribution

across all three categories was clearly demonstrated. However, most academic requirements were placed toward the end of the program, while many field-based requirements occurred earlier. Early in the program candidates are required to show fitness to be in the field (e.g., proof of professional liability insurance). Later in the program candidates need to demonstrate competency in field-based assessments (e.g., internship evaluation).

Conclusions

In this study, the ability to evaluate the assessment system as a whole is dependent on how the ePortfolio is designed. The assessment system, by describing the process and requirements that each candidate must complete, also identifies the benchmarks that determine program accountability. In order to track accurately candidate progress within and across cohorts, the ePortfolio template must reflect each and every requirement of the system. The risk of not representing each requirement may result in incomplete data or an inability to track candidate progress. The assessment system is built on transition points from admission to program completion. Each of the transition points contains multiple requirements, such as completing courses, passing assessment projects, or completing administrative forms. Each of those requirements must be translated to the ePortfolio design in order for such data to be available to program stakeholders. If requirements are ignored or combined, then data are missing or become more ambiguous. Ignoring or combining requirements makes the data more difficult to disaggregate, thus it becomes difficult to determine where program improvement is most needed.

Once the assessment system and the ePortfolio are aligned and data are being collected, there will come a time when change is evidently needed. The data may come from a variety of sources such as surveys, rubrics, or other instruments. Once the data are organized and aggregated, importance should be placed on categorizing the data based on what the data suggest as potential improvements to the teaching and learning process. The categories may include the assessment itself, the course in which it is implemented, the academic program as a whole, the learning outcomes achieved by completing the program, and the operational actions of managing the program. In this case, data revealed that candidates had difficulty with rubric criteria related to applying concepts of valid and reliable assessment. After lengthy discussion, it was determined that the candidates who performed poorly on that particular component had not yet taken the elective research course, which most candidates save until the end of the program. Further discussion occurred as to whether this was an assessment, course, or program problem. It was determined to be a course problem. The solution determined was to introduce just enough new content to one course in order for candidates to succeed at the specified rubric rows without overloading the course or removing the rubric criteria. Without the creation of an assessment system and an ePortfolio sophisticated enough to collect the data, this problem likely would not have been identified.

When implementing the assessment system and collecting data through the ePortfolio, identifying efficiencies in data entry can save time and effort. One solution is to implement any data import features that the commercial ePortfolio tool may possess. For example, demographic data were imported in order to aid in disaggregation. Alternately, time and effort can be saved by using export features to benefit systems outside of the ePortfolio system, such as the student (candidate) information system. In this case, many candidates are required to take and pass a standardized teacher licensure examination to complete a transition point and the subsequent program. Once the test is taken and evaluated, the scores are sent from the test provider to the institution and then entered in the student (candidate) information system. The IT team, a partner in the technical domain, exports a file from the student (candidate) information system, importing it into the ePortfolio. At this point, faculty and program administrators can determine whether the candidate has taken the test and whether or not the score meets the minimum and the requirement has been met. This import allows hundreds of data points to be handled at once without the need for entering each one manually. More time can be spent on analysis and outreach to those who have not met the minimum score. Whether a candidate has or has not met all of the requirements necessary to move on to the next transition point can also be determined much more quickly. It is critical for the technical system to be developed for viewing data over both short and long periods of time in order to observe how the system is maturing.

The assessment system and ePortfolio have been used for four academic semesters and have included hundreds of data points related to each candidate; the system is maturing in some ways, but not all. Much like human development, time alone is not an adequate indictor of maturity. While no specific definition exists, the authors consider the maturity of the assessment system to be dependent on various indicators that reflect maturity as an on-going process rather than a completed project or deliverable. None of the following indicators can be the sole indicator of maturity; rather, a balanced combination of multiple indicators is required. First, the authors value time or completed cycles as one critical indicator. The longer an assessment system has been in place, the more annual cycles over which it has

matured, although whether the activity within each cycle has been productive needs to be considered. Second, clear data points that can be expanded or collapsed are another indicator of assessment system maturity. The action of expanding and collapsing the data can help with drawing conclusions during analysis and discussion. Third, volume of data, including both overall quantity and breadth across the reporting unit, illustrates a commitment to collecting data. However, a commitment to collect data is not as significant as a maturity indicator as using the data is. Finally, regular and thorough use of the data provides opportunities to mature the assessment system. Maturity is stabilizing in terms of the quality and quantity of data collected; however, this is not a sole indicator of the maturity of the assessment system. More maturity is necessary regarding the data-informed discussions, actions as a result of data, revisions to courses and programs, and revisiting changes for efficacy. In reference to Figure 1, in order to mature the assessment, the cycle must be executed multiple times with special attention to efficacy: are the changes we are making having an effect? Or, when considering Jafari (2004), has data been used often enough—with proper attention to effectiveness—in order to eliminate the variables that cause changes not to "stick"?

Next Steps

Considering that much of this research is on the ideal design and content of the assessment system and the ePortfolio, future research should focus on the implementation of the system and its impact on candidate performance. In this case, prudent analysis would include determining whether early success on transition point requirements has any impact on success in later stages of the academic program. The analysis would include a comparative study between the rubric criteria for assessments used early in the program and rubric criteria for assessments later in the program, as well as program completion examinations used at the end of the program. Also, future study should be devoted to how revisions to the assessment system and ePortfolio are proposed, approved, and executed given the organizational structure and associated decision-making process. The future study would include an examination of the path followed by course and program changes proposed as a result of data discussed in various faculty and leadership meetings. Finally, the program will be reviewed by external consultants as part of the academic program review process to determine the maturity of the assessment system including the volume of data, process for dissemination and discussion, suggestion and tracking of action, quality and quantity of proposed changes, and impact of changes on subsequent assessments. The external program review would include steps leading to the identification of areas for improvement within a maturing system. Then, stakeholders would brainstorm the most efficient actions to improve the system as a whole.

References

Anderson, J., & Robins, J. (2006). Electronic portfolios as a bridge. *Intervention in School and Clinic*, *42*(107), 107-113. doi:10.1177/1053-4512.06.04.200.20201

Barrett, H. C. (2001). Electronic portfolios. In A. Kovalchick & K. Dawson (Eds.), *Educational technology: An encyclopedia*. Santa Barbara, CA: ABC-CLIO.

Batson, T. (2002, November). The electronic portfolio boom: What's it all about? *Campus Technology*. Retrieved from http://campustechnology.com/articles/2002/11/the-electronic-portfolio-boom-whats-it-all-about.aspx?sc_lang=en

Brickley, D., Schwartz, A. I., & Suen, H. K. (2000, April). *Web-based assessment: Validation of electronic portfolios.* Paper presented at the annual meeting of the American Educational Research Association, New Orleans, LA. Retrieved from suen.educ.psu.edu/~hsuen/pubs/portfolio.pdf

Burke, K., Fogarty, R., & Belgrade, S. (1994). *The portfolio connection.* Palatine, IL: Skylight.

Burke, K., Fogarty, R., & Belgrade, S. (1995). *The portfolio connection: A training manual.* Palatine, IL: Skylight.

Carney, J. (2004, April). *Setting an agenda for electronic portfolio research: A framework for evaluating portfolio literature*. Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA. Retrieved from http://it.wce.wwu.edu/carney/Presentations/AERA04/AERAresearchlit.pdf

Choban, G. (2004, April). *Tracdat and iwebfolio: An overview.* Paper presented at the 2004 SunGardSCT Summit, Philadelphia, PA.

Christensen, C. (1997). *The innovator's dilemma: When new technology causes great firms to fail*. Cambridge, MA: Harvard Business Review.

Clarke, J. (2009). The accountability conundrum: Staying focused, delivering results. *American Journal of Medical Quality*, *14*(5S), 5-43. doi:10.1177/1062.860.6.09.331588

Dorn, D. (2002). Electronic departmental portfolios: A new tool for departmental learning and improvement. In B. Cambridge (Ed.), *Electronic portfolios: Emerging practices in student, faculty, and institutional learning* (pp. 203-208). Washington, DC: AAHE.

Ehrmann, S. (2004, Fall). Beyond computer literacy. *Liberal Education*. Retrieved from http://www.aacu.org/liberaleducation/le-fa04/le-fa04feature1.cfm

Gibbons, A., & Bunderson, C. (2004). Explore, explain, design. In K. Kempf-Leonard (Ed.), *Encyclopedia of social measurement*. Waltham, MA: Elsevier.

Greenberg, G. (2003, January). *Electronic portfolios.* Paper presented at the meeting of the National Learning Infrastructure Institute, New Orleans, LA.

IMS Global Learning Consortium. (2004). *IMS global learning e-portfolio best practices and implementation guide.* Retrieved from http://www.imsglobal.org/ep/epv1p0pd/imsep_bestv1p0pd.html

Jafari, A. (2004, July/August). The "sticky" eportfolio system: Tackling challenges and identifying attributes. *EDUCAUSE Review, 39*(4), 38-49. Retrieved from http://www.educause.edu/ero/article/%E2%80%9Csticky%E2%80%9D-eportfolio-system-tackling-challenges-and-identifying-attribute

Levine, A. (2000). *Higher education at the crossroads.* Lecture presented at the 22nd annual Earl V. Pullias Lecture in Higher Education, Los Angeles, CA.

Love, D., McKean, G., & Gathercoal, P. (2004). Portfolios to webfolios and beyond: Levels of maturation. *EDUCAUSE Quarterly, 27*(2), 24-37. Retrieved from http://www.educause.edu/ero/article/portfolios-webfolios-and-beyond-levels-maturation

Oner, D., & Adadan, E. (2011). Use of web-based portfolio tools for reflection in preservice teacher education. *Journal of Teacher Education*, *62*, 477-492. doi:10.1177/0022.487.1.11.416123

Reeves, T., & Okey, J. (1996). Alternative assessment for constructivist learning environments. In B. Wilson (Ed.), *Constructivist learning environments: Case studies in instructional design* (pp. 191-202). Englewood Cliffs, NJ: Educational Technology Publications.

Richey, R., Klein, J., & Nelson, W. (2003). Developmental research: Studies of instructional design and development. In D. Jonassen (Ed.), *Handbook of research for educational communications and technology* (pp. 1099-1130). London, UK: MacMillan.

Robertson, R. L. (2006). *Development of institutional support systems necessary for teacher education unit faculty to create electronic portfolios for promotion and tenure* (Doctoral dissertation). Retrieved from the Argosy University Sarasota Library Catalogue.

Robertson, R. L., & Larkin, M. J. (2011, October). *Complex moving parts: Assessment systems and electronic portfolios.* Poster session presented at the meeting of EDUCAUSE, Philadelphia, PA.

Strudler, N., & Wexler, K. (2008). Costs and benefits of electronic portfolios in teacher education: Faculty perspectives. *Journal of Computing in Teacher Education*, *24*(4), 135-142. doi:10.1007/s11145-007-9085-7

Truer, P., & Johnson, J. (2003). Electronic portfolios need standards to thrive. *EDUCAUSE Quarterly*, *10*(2), 34-42. Retrieved from http://net.educause.edu/ir/library/pdf/EQM0324.pdf

van den Akker, J. (1999). Principles and methods of development research. In J. van den Akker, R. M. Branch, K. Gustafson, N. Nieveen, & T. Plomp (Eds.), *Design approaches and tools in education and training* (pp. 1-14). Dordrecht, The Netherlands: Kluwer Academic.

van den Akker, J., & Plomp, T. (1993, April). *Development research in curriculum: Propositions and experiences.* Paper presented at the annual meeting of the American Educational Research Association, Atlanta, Georgia.

Walden University. (2010). *Professional education unit assessment system*. Unpublished manuscript, Walden University, Minneapolis, Minnesota.

Walden University. (2012a). *About the college.* Retrieved from http://www.waldenu.edu/Colleges-and-Schools/College-of-Education-and-Leadership/About-the-College.htm

Walden University. (2012b). *Richard W. Riley College of Education and Leadership.* Retrieved from http://www.waldenu.edu/Colleges-and-Schools/College-of-Education-and-Leadership.htm

Walden University. (2012c). *Teacher preparation program.* Retrieved from http://www.waldenu.edu/Degree-Programs/Teacher-Preparation-Program.htm

Wilkerson, A., & Lang, P. (2003). Portfolios, the pied piper of teacher certification assessments: Legal and psychometric issues. *Educational Policy Analysis Archives*, *11*(45). Retrieved from http://epaa.asu.edu/ojs/article/view/273

MARTHA J. LARKIN is the Assessment Director of Early Childhood and Special Education Programs in the Richard W. Riley College of Education and Leadership at Walden University. She works to implement ePortfolios for the assessment and accreditation of educator preparation programs. She received her PhD in special education from the University of Alabama. Her current research focus is on data-informed decision making. She has published and presented broadly in the areas of special education pedagogy and reading.

ROYCE L. ROBERTSON is the Director of Outcomes Assessment for Ivy College Bridge of Tiffin University.

He works in the development and maturation of assessment systems. He holds an EdD in curriculum and instruction from Argosy University – Sarasota. His research, which focuses on ePortfolios and their design and use in higher education, includes articles, book chapters, and conference presentations.

International Journal of ePortfolio
http://www.theijep.com

2013, Volume 3, Number 1, 39-46
ISSN 2157-622X

The Development of an ePortfolio as a Capstone in a Holistic Health Minor

Joan M. Perks and Mary Lou Galantino
The Richard Stockton College of New Jersey

Use of electronic portfolios (ePortfolios) has been advocated to highlight student accomplishments as well as to document program and course outcomes. This use of ePortfolios incorporates information technology, thus aligning the educational process in degree programs to twenty-first-century teaching, learning, and information literacy. Here we describe a project to explore the feasibility of using the ePortfolio as a capstone for a Holistic Health Minor (HHM) in an undergraduate program. To make this transition in an efficient manner in the HHM, we developed a plan of implementation, with training for faculty and students. A team of faculty developed a professional ePortfolio template and implemented a pilot program for nine graduating students enrolled in the HHM. The team assessed college resources, assisted with developing the technological competence of both students and faculty, and created a rubric for final capstone assessment. Our experiences lead us to recommend that an interdisciplinary team is crucial for the success of the program. Our experiences also demonstrate that the use of ePortfolios can enhance assessment of student and program outcomes.

Technology has allowed the scholastic achievements of students to grow in unforeseen ways. Technology has supported multiple communication styles within schools, allowing students to create presentations beyond the simple posters and camcorder presentations that were once common. One invention that has the ability to change how students are critiqued is the ePortfolio. ePortfolios are being "considered important by those in education and employment, including policymakers" (Moores & Parks, 2010).

ePortfolios have multiple potential positive outcomes, including "the support of individuals through a critical reflective approach to competency development, supporting professional collaboration, and providing a structure for planning career progression" (Andre, 2010). In general, students feel that ePortfolios enhance their education by assisting them in integrating academic and experiential learning (Hayward et al., 2008). An ePortfolio encourages application and integration of knowledge, helps students recognize performance gaps, fosters student development, and promotes a student's responsibility for learning (Bierer, Dannefer, Taylor, Hall, & Hull, 2008).

ePortfolios and Student Learning

Reflective ePortfolios can assist students in organizing and integrating academic and experiential learning and can illuminate developmental transitions (Hayward et al., 2008; Lewis & Baker, 2007). At the end of the school term, the level of academic achievement and retention in an ePortfolio group was significantly higher than those in a control group (Guzeller, 2012). Recent studies have varied in their attempts to use the ePortfolio with college students. Health-related pre-professional and professional curricula have begun to explore the utility of ePortfolios as a mechanism for reflection and feedback in clinical decision making. Wassef, Riza, Maciag, Worden, and Delany (2012) used the "Plan, Do, Study, Act" model for quality improvement in order to develop a professional ePortfolio template that allows students to assess their nursing program in multiple ways. Another study attempted a different approach by using a four-stage ePortfolio for a Doctorate of Physical Therapy program. The researchers began by creating a paper outline of their ePortfolio template, followed by an electronic format. With subsequent pilot testing, an ePortfolio tutorial was developed (Hayward et al., 2008).

Feedback is a highly complex, multi-dimensional phenomenon, and healthcare learners consider it essential for their learning, recognizing that without it patient safety may be compromised (Peacock, Murray, & Scott, 2011b). Drawing upon three examples where ePortfolios have been embedded into the curriculum, Peacock et al. (2011b) found that most participants were generally positive about using the ePortfolio to access, review, and store feedback on their assessments. In some cases where the ePortfolio had been introduced across a healthcare program, a number of learners had also begun to use feedback provided through the ePortfolio as a springboard for reflection and planning for future development. These researchers used novel work based on threshold concept, and proposed the Personal, Learning, and Thinking Skills framework as a guide to support deeper learner engagement (Peacock et al., 2011b). Emerging literature includes health-related degrees with pre-professional programs (Moores & Parks, 2010; Vernazza, et al., 2011), and results are encouraging. Thus, the authors chose to integrate the

use of ePortfolios in an undergraduate minor program in order to assess student learning outcomes. The use of ePortfolios in a health-related minor program has not been studied in the literature. Therefore, the ePortfolio was our team's primary goal as part of our internal assessment and as a contribution to our accreditation process and to the dialogue on the use of ePortfolio in academic institutions.

Development of an ePortfolio in the Holistic Health Minor

The interconnectedness of teaching, learning, and assessment is a challenge for minor programs in higher education as the emphasis on closing the loop becomes the responsibility of the faculty. Throughout the assessment process, it is important that student learning outcomes remain the focus and not be lost in an endless collection of data. It is vital to understand that assessment data derived in a manner appropriately linked to the program outcomes be available to those who develop and implement strategies to improve teaching and learning. The integration of a tool that simultaneously evaluates student learning and provides measures for assessment purposes is an effective approach for attaining both goals. Strategies to meet the assessment needs of the program must be implemented in a manner that does not disrupt the teaching-learning process. The development of an ePortfolio as a capstone for the Holistic Health Minor (HHM) for undergraduate students is one method for evaluating student learning outcomes of a program and enhance student learning. The HHM assessment process identified the need to verify that students graduating in this minor had successfully met the learning outcomes of the program. The assessment team developed an ePortfolio grading rubric that was piloted by interdisciplinary HHM faculty for evaluating student learning outcomes. The catalyst for the self-study and the development of an ePortfolio as a pedagogical approach was the college's forthcoming regional accreditation and the desire to demonstrate that the minor program met the strategic outcomes of the college. By applying knowledge gained through assessment to improve student learning, progress towards institutional effectiveness can occur.

Initial Steps

Measuring program effectiveness is an ongoing process and should be thought of as a systematic plan. Initially, a small team of faculty formulated program goals and student learning outcomes in order to achieve a holistic approach to health and well-being. Faculty developed an appropriate assessment instrument, which is a critical step in confirming whether students know the important concepts needed to acquire the holistic health minor. When the team began its work, with the exception of successful completion of five courses within the HHM, no formal assessment for students was established. The program therefore had no way to verify competency in the overarching goals of the minor. Since course offerings were multidisciplinary in nature and variable in content and experiential learning, the newly formed assessment team realized the need to determine the acquisition of programmatic goals by student graduates. Curriculum mapping revealed a wide range of inconsistencies in the course learning outcomes, which further confirmed the need to ensure that all graduates of the HHM meet the desired program and student learning outcomes.

Capstone Development

The HHM Assessment Committee worked diligently to develop an infrastructure to support and strengthen the minor's internal assessment plan through the development of an ePortfolio as a capstone project. To ensure that program outcomes guided the capstone development, implementation, and assessment, the faculty reviewed the literature and met with an expert in ePortfolio development and implementation. In general, the HHM capstone ePortfolio encouraged critical thinking and deeper learning and showcased abilities and achievements.

As part of the assessment plan for the HHM, the capstone project was developed through the use of an ePortfolio using the software Adobe Acrobat Pro X to monitor students' progress through HHM courses and to create mutually reinforcing intellectual and co-curricular experiences among diverse students and faculty. The Adobe Acrobat Pro X was selected for its current availability for all students through the use of the college's computer labs. The use of this software program prevented students from incurring any additional costs. Specific student outcomes, guidelines, and requirements were formulated by linking theory to practice, with the use of technology as a medium. The completion of an ePortfolio is now a requirement for all graduating HHM students.

Initially, the learning outcomes and guidelines were reviewed by the HHM faculty before implementation and distribution to the students. In addition, a student teaching assistant reviewed the modified software instructions to provide feedback on focus and clarity before posting them on the HHM Blackboard site. A copy of the rubric was provided for students to review. They were provided with a variety of methods to support the development of their ePortfolio capstone. Two ePortfolio workshops were conducted for students requiring assistance in developing or completing their ePortfolio prior to

graduation. In addition, some students with scheduling conflicts were provided one-to one-mentoring in the computer lab with HHM assessment faculty present at pre-scheduled times. The Discussion Area on Blackboard 8 was used as a site for questions and answers and the eventual posting of the completed ePortfolios by the nine graduating students of the program. The site was also made available to approximately forty non-graduating students to view samples and to begin their capstone projects.

Implementation

During the students' academic career at the college, they are advised by the HHM Coordinator to develop an ePortfolio consisting of documents that reflect their journey through holistic health coursework and related experiences. Information to assist the students in this project is provided in the HHM ePortfolio Guidelines. The students may be creative in the presentation of their work but must relate the course content to the program outcomes. Students generally begin with a self-introduction page that includes their holistic health philosophy statement. Many students begin by listing the program outcomes and align their course syllabi accordingly. Samples of papers, exams, and projects supporting program outcomes are included. Any evidence of college or community service is also incorporated, along with letters, certificates, and photos. Some students write a series of short stories or poems, or a memoir, supplementing their writings with short analytical paragraphs reflecting what they have learned and what they will take with them. It is suggested that the students provide the link to the HHM Website within the capstone. The ePortfolio provided evidence about the cumulative effect of student learning outcomes during the HHM program.

Evaluation of the ePortfolio

The purpose of the ePortfolio was to ask students to engage in metacognition by reflecting on what and how they learned in the HHM. The ePortfolio provided an opportunity to coalesce student learning from a holistic perspective. The assessment rubric was useful in this context because of its cost-effectiveness, reasonable accuracy, and carefully planned systematic assessment process linking student learning to program and institutional goals. Students were evaluated on their level of performance related to the following program outcomes:

1. Students will successfully apply elements of holistic health theory and knowledge through recognition of interactions between theory and practice.
2. Students will explore the concept of holism by examining the relationship between quality of life, health, illness, and recovery.
3. Students will analyze the impact of health promotional campaigns and reflect upon the impact they have on their own health decisions.
4. Students will be able to locate, retrieve, and critically evaluate a variety of information sources related to holistic health.

A rubric was designed specifically for evaluating, in measurable and comparable terms, the students' submission of the final capstone ePortfolio project. Members of the HHM assessment committee evaluated the ePortfolios, and all faculty were given the opportunity to participate in the evaluative process. The HHM faculty believes that the scholarly activity students experience in the minor promotes liberal arts ideals, such as developing as lifelong learners. Students who develop knowledge in this area demonstrate their understanding by completion of a high-quality capstone project. The HHM ePortfolio Evaluation Rubric includes four levels of performance: novice, basic, competent, and proficient. Each level is assigned a value of 1 to 4. Criteria included content relevancy, reflection, presentation, and program outcomes (Table 1). Content descriptions related to the levels of performance were kept clear and concise. To attain a proficient level (i.e., a score of 16), students had to provide creative samples of their coursework, related personal and field experiences, a philosophical statement of holistic health, a link to the website, and interpretative graphics. The maximum score a student could achieve was 16, and the minimum score was 4 (see Appendix). A score of 11 was required to receive a satisfactory outcome and complete HHM program requirements.

Results

The pilot program included nine HHM graduating students who completed a capstone ePortfolio. Two assessment committee faculty members evaluated the capstones using the HHM ePortfolio Evaluation Rubric. The rubric indicated whether a student's work was rated as novice, basic, competent, or proficient. The ePortfolio is a pass/fail assignment, so a numerical scale without a clear neutral midpoint was used to force a non-neutral response (Middle States Commission on Higher Education, 2007). The rubric consisted of a simple rating scale, with a maximum score of 16 and a minimum score of 4. The mean score was 14.25, and the median score was 15. The findings of grading consistency are supported by a Cronbach's Alpha of .82, which reflects an adequate internal reliability

Table 1
ePortfolio Rubric Results of the HHM Capstone

Level of Performance	Range		M
	Potential	Actual	
Content Relevancy for Holistic Health	1-4	2-4	3.68
Reflection of the Holistic Health Journey	1-4	3-4	3.81
Presentation Shares the Experience	1-4	1-4	3.56
Program Outcomes of the HHM Minor	1-4	1-4	3.25

consistency. All HHM faculty were encouraged to review the ePortfolios for comment and suggestions.

In relation to HHM's Program Outcomes, students achieved a mean score of 3.25. A maximum score of 3, indicating proficiency, was assigned by the reviewer when program outcomes were linked to courses and the students' personal experience and when they provided a link to the HHM website. A score of 3, reflecting competency, was assigned when student program outcomes were linked to course and student experiences, but a greater depth reflecting a relationship to their holistic health journey was missing. A basic score of 2 was assigned when not all program outcomes were mentioned and their relation to the students' experience was not clearly defined. A novice score of 1 was assigned when students provided a link to the HHM website, but no evidence of self-reflection related to the program outcomes was present. Scores on the HHM rubric consistently revealed high levels of quality (or achievement), as evidenced by scores on the rubric designed to assess the program's overall efforts.

In relation to the students' performance level for *content relevancy for holistic health*, the mean score was 3.68. A proficient score of 4 indicated that the ePortfolio provided excellent samples of coursework related to personal experience and that samples of various course assignments and community engagement were present. A competent level score of 4 was achieved by students who provided examples of course work related to personal and field experiences. A basic score of 2 was assigned when students presented a limited number of examples of their work and out of school activities. Students using only personal information not clearly related to holistic health were given a score of 1.

Reflection on the holistic health journey is a very important area of the student's learning experience. It is imperative that students articulate their personal Philosophy of Holistic Health. Captions linking theory to practice with reflective thinking assisted the student with integration of knowledge to real life experiences. The mean score was 3.81. Students capable of presenting this information earned a proficiency score of 4. A competent student, who used good captions to link theory to practice but had a superficial reflection, received a score of 3. A basic score of 2 occurred when captions were present and linked practice and theory but reflection was purely descriptive. A novice score of 1 was assigned when the student did not link theory to practice and failed to provide adequate evidence of reflective thinking.

The performance level on the rubric for *presentation/shares the experience* provides students with the challenge of communicating effectively their lived experience to others who view their ePortfolio. The students' mean score was 3.56 for this category. A proficient score of 4 indicated excellent use of graphics and technology to enhance the presentation of the ePortfolio as a capstone project. Uploading and transferring interpretative graphics is a necessary skill for designing an ePortfolio worthy of submitting as a capstone project. Students achieved a competent score of 3 if they demonstrated good use of graphics and technology that enhanced the HHM ePortfolio as a capstone project. A basic student score of 2 indicated minimal use of creative graphics or technology. When little or no graphic skills were utilized other than those offered through the basic Adobe Acrobat Professional X, the student's score was considered to be at the novice level and was assigned a numerical score of 1.

The final section on *program outcomes of the HHM* provided the students' perception of how each of the five courses met program goals. Students' mean score was 3.25. A proficient score of 4 demonstrated that program outcomes were linked to courses and students' personal experience and that the HHM website link was included. A score of 3 indicated that program outcomes had been met but that greater depth was needed in order to reflect a relationship to students' holistic health journey. If few program outcomes were mentioned and the relation was not clearly defined, students received a basic score of 2. Finally, students received a novice score of 1 if there was no mention of outcomes.

Graduating students were asked to provide feedback regarding the use of the ePortfolio as a capstone for the HHM program. Anecdotal evidence of perceived benefits included a feeling of

accomplishment and a sense of the amount of work necessary to develop a personal holistic health philosophy. In other words, based on their coursework in the HHM students witnessed the evolution of their own concept of holistic health. Barriers included the fact that some students did not save all their projects, as they did not have previous knowledge of the capstone requirement. Recommendations for future student engagement in the capstone included providing adequate time and preparation for the ePortfolio.

Limitations

Limitations of an assessment for a newly developed capstone using ePortfolio are unique to the Holistic Health Minor. The design, implementation, and evaluation of the learning outcomes provided students and faculty with greater awareness of course experiences through meaningful learning. In this small cohort, high scores for the ePortfolio indicate as well that further work may be needed to ascertain which students are exemplary and which are performing at a minimum competency level. Although the authors were pleased with high scores, after an evaluation of the rubric and process, it was revealed that a one-to-one orientation and close mentoring had been available to all nine students completing their ePortfolio prior to graduation. In the future, this may be problematic due to the increasing enrollment of HHM students and subsequent need for larger group orientations and due to time constraints on the faculty. For example, comparing grade point average and other measures of advisement through the HHM may impact the outcome of higher scores. Further discrimination may be necessary in order to make distinctions in future student outcomes for the HHM ePortfolio.

The art of collecting and analyzing a personal journey inherently produces subjective outcomes and findings. Our developed rubric provided one way to explore the underlying student and program goals. While strong agreement was noted in faculty scoring, additional domains beyond program outcomes may be missed in the student learning process in the HHM. However, our sample size was small, thus preventing generalizing our results for broader contexts. The intention of developing a HHM ePortfolio was to assess student and program outcomes. The limited software options for the faculty were directly linked to budget constraints for the program and the students; developing an in-house platform or purchasing a commercial product was simply too expensive. Due to the software's limitations, the time needed to master the software by the students and the faculty was challenging. A skill inventory of technological competency and ePortfolios was not conducted, but may be beneficial to successfully implementing an ePortfolio as an assessment measure. Privacy, security, and access to the ePortfolio after the students graduate were also identified as concerns. Despite these concerns, the faculty found that implementing this additional requirement for the HHM, while time intensive, led to a collection of information confirming that programmatic outcomes have been met.

Discussion

The literature on the application of an ePortfolio, although representing its potential benefits and values, has its limitations. The time-consuming manner of implementing such a program, since it involves teaching both faculty and students how to maneuver properly through the software, can be challenging (Andre, 2010). Therefore, students must be taught early on in their program of study how to utilize the program so that there will be ample time allotted for practicing the use of the ePortfolio (Moores & Parks, 2010). Supportive, clear, and succinct guidelines are also necessary for optimal ePortfolio outcomes. Professors assessing ePortfolios should have clear guidelines and criteria regarding the structure and size of the students' ePortfolios (Moores & Parks, 2010). While our research did not provide extensive feedback beyond the numeric rating arrived at through the rubric, Peacock, Murray, and Scott (2011a) have conducted research on the role of feedback through the use of ePortfolios. They point out that as educators, we are still in the formative stages of implementation of ePortfolios and that further research is required to explore its future role, especially regarding feedback in the healthcare arena (Peacock et al., 2011a, 2011b).

Our ePortfolio implementation and assessment aligns with research findings in the literature. Therefore, a formal presentation of guidelines, accompanied by a link on the HHM website, proved to be an appropriate strategy. Orienting students and faculty early in the process fostered greater adherence to the goals of this capstone for graduating HHM students. Additionally, a major advantage of our HHM ePortfolio is the ability to share information with multiple faculty readers from different schools simultaneously, since the HHM minor is an interdisciplinary approach to learning throughout the college. The use of a developed rubric to assess HHM program outcomes is important in providing valuable feedback to all faculty teaching in the minor. The rubric also provides an explicit measure of program outcomes in student HHM learning. Our experience demonstrated that early planning, preparation, and training of students and faculty are necessary for successfully meeting the needs of the HHM program. Currently, the ePortfolio asks students to synthesize course content with their sense of personal well-being in a reflective manner.

This process may provide them with an expanded perspective on their community and world view as it relates to holistic health. Future graduate surveys, however, are necessary to determine the impact of the ePortfolio process and continued life-long learning beyond graduation. It is the intention of the HHM ePortfolio to incorporate program learning into students' future careers with the potential to be used as a catalyst for graduate school or employment opportunities. A recent survey found that 72% of companies have increased their use of social networks for job recruiting (Schuele & Madison, 2010). If employers are searching the Internet for information, then students who can provide a professionally created website can potentially increase their job opportunities. Since ePortfolio websites can be accessed anytime from almost any place, they are easy and convenient for both graduates and employers.

The development and implementation of an ePortfolio and grading rubric has provided a framework for assessment of student learning in the HHM. Lessons learned include the importance of student and faculty training, of setting clear expectations, and of fostering greater communication with students and faculty throughout the ePortfolio process. There is potential for an expanded role for ePortfolios throughout the program. For example, students may incorporate greater reflection earlier in the process for timely feedback from each course to enhance learner engagement. While the use of a rubric for assessment provides rich insight into program outcomes, future research is needed to ascertain the sustainability of the ePortfolio in postgraduate students.

References

Andre K. (2010). E-portfolios for the aspiring professional. *Collegian, 17*(3), 119-24. doi:10.1016/j.colegn.2009.10.005

Bierer, B., Dannefer, E., Taylor, C., Hall, P., & Hull, A. (2008). Methods to assess students' acquisition, application, and integration of basic science knowledge in an innovative competency-based curriculum. *Medical Teacher, 30*, 171-177. doi:10.1080/01421590802139740

Guzeller, C. (2012). The effect of web-based portfolio use on academic achievement and retention. *Asia Pacific Education Review, 13*(1), 1-8. doi:10.1007/s12564-012-9214-0

Hayward, L. M., Blackmer, B., Canali, A., Dimarco, R., Russell, A., Aman, S., & Rossi, J. (2008). Reflective electronic portfolios: A design process for integrating liberal and professional studies and experiential education. *Journal of Allied Health, 37*(3), 140-159.

Lewis, K. O., & Baker, R. C. (2007). The development of an electronic educational portfolio: An outline for medical education professionals. *Teaching & Learning in Medicine. 19*(2), 139-147.

Moores, A., & Parks, M. (2010). Twelve tips for introducing e-portfolios with undergraduate students. *Medical Teacher, 32*(1), 46-49. doi:10.3109/01421590903434151

Peacock, S., Morss, K., Scott, A., Hislop, J., Irvine, L., Murray, S., & Girdler, S. T. (2009). Using ePortfolios in higher education to encourage learner reflection and support personalized learning. In J. O'Donoghue (Ed.), *Technology supported environments for personalized learning: Methods and case studies* (pp. 185-211). New York, NY: Information Science Reference.

Peacock, S., Gordon, L., Murray, S., Morss, K., & Dunlop, G. (2010). Tutor response to implementing an ePortfolio to support learning and personal development in further and higher education institutions in Scotland. *British Journal of Educational Technology, 41*(5), 827-851. doi:10.1111/j.1467-8535.2009.00986.x

Peacock, S., Murray, S., & Scott, A. (2011a). *Exploring the learning experience of ePortfolios for formative and summative feedback in the healthcare professions*. Edinburgh, UK: Queen Margaret University.

Peacock, S., Murray, S., & Scott, A. (2011b). The transformative role of ePortfolio feedback in healthcare learning. *International Journal of ePortfolio, 1*(1), 33-48.

Schuele, K., & Madison, R. (2010). Navigating the 21st century job search. *Strategic Finance, 91*(7), 52.

Middle States Commission on Higher Education. (2007). *Student learning assessment: Options and resources* (2nd ed.). Philadelphia, PA: Middle States Commission on Higher Education. Retrieved from www.msche.org/publications/SLA_Book_0808080728085320.pdf

Vernazza, C., Durham, J., Ellis, J., Teasdale, D., Cotterill, S., Scott, L., . . . Moss, J. (2011). Introduction of an e-portfolio in clinical dentistry: Staff and student views. *European Journal of Dental Education, 15*(1), 36-41. doi:10.1111/j.1600-0579.2010.00631.x

Wassef, M. E., Riza, L., Maciag, T., Worden, C., & Delaney A. (2012). Implementing a competency-based electronic portfolio in a graduate nursing program. *Computer Informatics in Nursing, 30*(5), 242-8. doi:10.1097/NXN.0b013e31824af6d4

JOAN M. PERKS, APRN-C, PhD candidate, CEN, CNE, CRNI is an Assistant Professor of Nursing and teaches critical care in the baccalaureate program and

nutrition in the Holistic Health Minor at the Richard Stockton College of New Jersey. She currently is the Chair of the Assessment Committee for the Holistic Minor and has lead in the development of the ePortfolio as the capstone of the Minor. Joan has played an intricate role in linking the Holistic Health ePortfolio and its rubric to the assessment of the program's outcomes. Prior to coming to Stockton College, she had extensive experience with academic programs across the institution to support the assessment of learning. She received her diploma in nursing from the Hospital of the University of Pennsylvania, her BSN from Thomas Jefferson University, her MSN (Burn Emergency and Trauma) and PhD candidacy from Widener University. She also has enjoyed a 30-year clinical career working in acute care.

MARY LOU GALANTINO, PT, PhD, MSCE, is a professor at the Richard Stockton College of New Jersey and adjunct scholar at the University of Pennsylvania where she conducts research on integrative medicine and chronic diseases. She also collaborates with the Department of Family Medicine and Community Health at Penn as an associate professor. She is the Holistic Health Minor Coordinator for the undergraduate students at Stockton. Dr. Galantino received a bachelor of science in Physical Therapy from the University of Pittsburgh, a master of science degree in Physical Therapy from Texas Women's University, and her doctorate from Temple University. From 2002-2004 Dr. Galantino was an NIH-NCCAM post-doctoral fellow in the School of Medicine at the University of Pennsylvania and completed another master's degree in clinical epidemiology and biostatistics. Dr. Galantino has enjoyed a 30-year clinical, research and training career working with patients diagnosed with chronic diseases. She has extensive experience with the HIV population and has been an advocate locally and nationally for rehabilitation services since the early 1980s through her experiences at MD Anderson in Houston, TX, where she received her oncology rehabilitation training. She has received HRSA government grants to service HIV patients in her private practice in Houston, TX and Voorhees, NJ and established community based rehabilitation interventions for people living with chronic disease. She has served as the Oncology Section's Research Chair for over a decade, and has published extensively on cancer, HIV, and integrative therapies (e.g., yoga and tai chi). Her publications include two texts entitled: *AIDS and Alternative Medicine: Current State of the Science* by Churchill Livingstone (2002) and *Clinical Assessment and Treatment of HIV Disease: Rehabilitation of a Chronic Illness* by SLACK, Incorporated (1992). She has served as editor for Orthopaedic Physical Therapy Clinics of North America and published *Complementary Medicine in Orthopaedic Physical Therapy* in 2000. Since that time, she has authored research articles addressing the benefit of meditation for health care professionals, the use of yoga for chronic conditions, and wellness coaching for graduate students and cancer survivor populations. She is the recipient of the New Jersey Cancer Consortium for Research where she investigated the use of yoga during cancer treatment and the impact of cognition and quality of life. She is involved in NIH-funded research investigating the use of acupuncture for osteoarthritis and yoga for mild hypertension, and has served on the Musculoskeletal Section NIH review committee for several years. Recently, Dr. Galantino has an international presence developing acupuncture clinical experiences in Bejing, China and HIV research in Johannesburg, South Africa. She also serves on the Governor's Task Force for Quality of Life in Cancer Survivorship in the state of Delaware and is a certified yoga instructor. Dr. Galantino enjoys teaching others and is committed to the integration of evidence-based complementary medicine throughout rehabilitation practice.

Acknowledgements

The authors would like to thank our funders and colleagues. This work was partially funded by a Provost Grant from Richard Stockton College of New Jersey and the Institute for Faculty Development. The authors would like to thank Dr. Amy Hadley who was the ePortfolio consultant, and Dr. Heather McGovern and Maureen Stevens, DPT for their assistance in assessment of the Holistic Health Minor.

Appendix
Holistic Health Capstone ePortfolio Rubric

Level of Performance	Novice 1	Basic 2	Competent 3	Proficient 4
Content Relevancy for Holistic Health	Used only personal information unrelated to holistic health	Few examples of coursework or community engagement activities were provided	Examples of coursework, related personal and field experiences provided	Excellent examples of coursework, related personal and field experiences were provided. (i.e., samples of course assignments and community engagement activities were present)
Reflection of the Holistic Health Journey	Captions did not link theory to practice and no evidence of reflective thinking was present	Captions were present and linked theory to practice but were descriptive only	Good use of captions to link theory to practice but reflection was superficial	Excellent captions that linked theory to practice and provided reflective thinking. (i.e., Philosophy of Holistic Health statement was present)
Presentation Shares the Experience	No graphics or technology were utilized	Minimal use of graphics or technology were utilized	Good use of graphics and technology that enhanced the HHM ePortfolio as a capstone project	Excellent use of graphics and technology that enhanced the presentation of the HHM ePortfolio as a capstone project. (i.e., uploaded interpretative graphics that linked the experience to holistic health)
Program Outcomes of the Holistic	No mention of the program outcomes	Few program outcomes were mentioned, relation was not clearly defined	Program outcomes were linked but a greater depth needed to reflect relationship to holistic health journey by student	Program Outcomes were linked to courses and student's personal experience. (i.e., Link to HHM Website present)
Sub-Scores				
				Total Score =

International Journal of ePortfolio
http://www.theijep.com

2013, Volume 3, Number 1, 47-61
ISSN 2157-622X

The Capacity of Teacher Education Institutions in North Carolina to Meet Program Approval and Accreditation Demands for Data

Renee Corbin, C. Dale Carpenter, and Lee Nickles
Western Carolina University

A statewide survey of the infrastructure of teacher education program assessment systems in North Carolina, which include electronic portfolios as a component in the assessment system, measured their ability to meet current and anticipated future data demands for state approval and national accreditation. Almost two-thirds of the 46 teacher education programs in the state responded to questions about the personnel, hardware, and software resources needed to meet current and future demands for data collection, management, analysis, and reporting. Although public and private institutions have common concerns, there were differences in response. While 78% of public teacher education institutions indicated that they had adequate to excellent overall infrastructure to meet current and future needs, only 53% of private or independent institutions reported adequate to excellent overall infrastructure. Public and private institutions indicated different resource needs to address program approval and accreditation demands.

The viability of quality teacher education programs in North Carolina is dependent upon their ability to make improvements based on the performance data of teacher education candidates. To meet this need, institutions of higher education in North Carolina must each develop an assessment system that includes procedures, data systems, policies, and supporting technology. In North Carolina, teacher education programs submit evidence generated by teacher candidates through the electronic portfolio system of their choosing. The electronic portfolios are submitted to the North Carolina Department of Public Instruction (NC DPI) as part of program approval. The electronic portfolio system is one piece of an overall institutional assessment system that provides data on teacher education program quality. The assessment system also serves as a means for communicating program performance data to other accrediting bodies, such as NCATE and TEAC (now CAEP).

The purpose of this assessment effort is to produce quality teachers. The evidence that the quality of teachers is linked closely to the quality of education in the nation's K-12 schools is strong (Brophy & Good, 1986; Darling-Hammond, 2000; Ingersoll, Merrill, & May, 2012; Osguthorpe, 2008; Schacter & Thum, 2004; Thompson, 2009). There is less agreement about the optimal source of quality teachers or how to produce quality teachers in the numbers demanded by the school population. Currently, the nation's schools are staffed by not only those who have completed teacher education programs at colleges and universities but also those who followed alternate paths, such as completing liberal arts degrees and seeking training through special training programs (e.g., Teach for America), and those who completed non-teaching degrees and returned for graduate university training in pedagogical knowledge and skills, often called Masters of Arts in Teaching (MAT).

The traditional path of teacher preparation programs at colleges and universities has been criticized in recent years (Levine, 2006; Tucker, 2011), and institutions are continuing to evaluate the effectiveness of programs for producing high quality teachers and to develop ways to strengthen teacher education programs. One of the major means of holding teacher preparation programs at colleges and universities accountable for meeting quality standards and for encouraging continuous improvement is the approval process by state departments of education and the awarding of national accreditation to those programs that meet specific quality standards and show evidence of improving their programs. Until the beginning of the twenty-first century, approval and accreditation relied largely on static data presented at multi-year intervals showing that the teacher education program had adequate resources, such as qualified faculty, facilities, curriculum, and adequate field and clinical experiences to produce quality teachers.

In 2002, the National Council for the Accreditation of Teacher Education adopted standards that relied more on outcome data to demonstrate meeting the standards (NCATE, 2002). Teacher preparation programs had to show that graduates passed licensing exams at an acceptable rate and to document in measurable ways their impact on the students with whom they interacted (NCATE, 2008; Sanders & Horn, 1998). Assessment became critical in approval and accreditation processes, and this continues to the present.

New approval requirements at the state and national level require more quantifiable data than ever before (Imhof & Picard, 2006; Pecheone, Pigg, Chung, & Souviney, 2005). The data required include performance evaluations of university students in teacher education programs throughout their academic career and beyond. The need to design performance

evaluations of key course requirements, field and clinical experiences, and follow-up evaluations of in-service graduates has put new demands on teacher education programs to develop efficient data collection systems (Brown, Chen, & Jacobson, 2012; Everhart & Gerlach, 2011; Kirchner, 2012; Martindale & Bartell, 2010). Evaluations must be multi-faceted and utilize current technologies to collect, manage, analyze and report results beyond previous paper-based systems (Fiedler, Mulligan, & Finnegan, 2009; Prus & Strein, 2011). Many institutions struggle to meet those demands. Indeed, some teacher preparation programs, including one program in North Carolina (Sandford, 2012), have found that they cannot provide the necessary resources to meet demands for data (Coupland, 2011).

A Statewide Perspective

Currently, North Carolina teacher education programs at colleges and universities approved by the North Carolina State Board of Education to prepare PreK-12 teachers are changing their processes for retaining approval at the state and national levels. Beginning in 2009, teacher education programs have implemented mandated program revisions, and in the summer of 2012, NC DPI piloted a test of a new program approval process that, beginning in 2014, will help to determine final processes for program approval and accreditation. These processes exemplify a trend toward longitudinal outcomes-based assessment data and the use of digital technology, including electronic portfolios, to store, retrieve, analyze, and report these data.

The purpose of this study is to ascertain the infrastructure capacity of teacher education programs in North Carolina to meet current and future demands for data collection, management, analysis, and reporting related to program approval and accreditation.

Methodology

In light of the new program approval process using digital technology that is taking place in North Carolina, we created a survey to probe how institutions of higher education (IHEs) are responding to current and future demands for data. In particular, we investigated the infrastructure of teacher education assessment systems in place at the IHEs.

Subjects

There are 46 IHEs in North Carolina offering at least one academic program in teacher education approved by NC DPI to recommend graduates for a North Carolina teaching license. As all IHEs are required to collect electronic evidence evidences for teacher candidate graduates, the investigators contacted each of the personnel responsible for the electronic assessment system to respond to the survey.

NC DPI compiled a list of the support personnel at all of the 46 IHEs participating in the summer 2012 pilot review of the electronic evidence. These personnel were identified as the contact persons for assistance at each IHE's electronic assessment system. The list includes mainly technology managers, though some have other primary roles in their IHE. Since these personnel had significant involvement in the assessment process and this pilot study, they would most likely be able to respond to the survey questions. The investigators distributed the survey to all 46 personnel identified as the primary contact for their IHE.

Survey Design

The survey asked three major categories of questions, including the nature of the North Carolina IHE, the roles of the personnel and resources involved in the IHE's assessment system, and how well the personnel and resources committed to the assessment system are able to collect, manage, and report the necessary data.

The first section of the survey, the nature of the IHE, identifies the IHE as public or private and identifies in which academic units teacher education programs are housed. Due to anecdotal evidence, investigators suspected that differences might be seen in this dimension.

The second section, the nature of the personnel and resources involved in each IHE's assessment system, identifies the official roles of personnel involved and their level of involvement in the system. It also includes questions on the type of electronic assessment system used, how long it has been used, and how users are supported.

The third section asks how well the infrastructure of personnel and software meet accreditation requirements and the extent to which more resources (if any) are needed.

Appendix A at the end of the paper contains a copy of the survey used in the research.

Survey Administration

The survey was administered using the online Qualtrics survey tool. A link to the survey was sent via email to the 46 identified personnel. After an initial period of two weeks, those who had not responded were sent a reminder. A final reminder was sent four weeks after the survey was initially administered.

Respondents

Of the 46 IHEs surveyed, 29 responded, for an overall 63% response rate. Eleven public IHEs responded, and 18 private IHEs responded. This

compares with 15 public and 31 private IHEs total that were surveyed. Thus, 73% of personnel representatives at public institutions and 58% of those at private ones responded.

Most of those responding to the survey reported that they were part of a School or College of Education (71%), while 14% were located in a department within Arts and Sciences or a program within a department (4%). While the majority of those responding reported being from a school or college of education, the primary role of those completing the survey varied. Approximately 30% responding reported that their role was either as department chair, teacher education director, or as dean, assistant dean, or associate dean. Slightly over 25% reported their role as assessment coordinators or directors, while fewer reported their roles as technology coordinators or directors or as faculty members.

Results

In order to determine to what extent institutions can meet the demands of data collection, management, analysis, and reporting, we asked those completing the survey what percentage of their job function is devoted to data management and what types of personnel are associated with the data collection, management, analysis, and reporting process. Figure 1 shows the percentage of time devoted to data management by those completing the survey. As Figure 1 shows, given the roles of those completing the survey, the majority have multiple job responsibilities and data management is just one function within their position.

In looking at the varied resources of institutions, we asked respondents to report on the personnel resources involved in maintaining their assessment systems. Respondents reported the number of administrative assistants, technology coordinators or directors, assessment coordinators or directors, department chairs, teacher education directors, deans, associate deans, assistant deans, and student assistant personnel utilized for their assessment systems. They also reported whether the personnel positions worked with the assessment system full-time or part-time. The majority (57%) reported utilizing at least one part-time administrative assistant to assist with the assessment system. While 50% or less reported a teacher education director, a department chair, dean, and associate dean as being involved part-time with the assessment system, the majority reported that technology coordinators/directors (56%), assessment coordinators/directors (60%), and teacher education directors (62%) worked full-time with the assessment system.

Figure 2 indicates institutional perception about the adequacy of personnel supporting their assessment system. Only 24% identified the personnel supporting their assessment system as being adequate or excellent. With the majority reporting personnel as being minimal or inadequate, the increased demand of reporting will strain IHE's ability to meet increased reporting demands.

Survey respondents were also asked to indicate the primary software used for data collection, management, analysis, and reporting by their assessment systems. Since the question asked them to check all that apply for their institution, many of the respondents reported using multiple software packages for their primary assessment system. The major component of the primary assessment system for most institutions is an electronic portfolio. In North Carolina, those responding to the survey reported TaskStream, LiveText, TK20, and Foliotek electronic portfolio software as a component of their assessment system. Responses for all software resources can be seen in Figure 3. Several software packages were listed only once by institutions; these include Digication, TracDat, Weave, Digital Measures, LAMP, Informer, Colleague, SPSS, Sakai, and Qualtrics.

Responses are similar to a previous informal survey, conducted last year, to determine what software North Carolina institutions were using for their assessment systems. Results from the informal survey indicated that of the 44 responses from both public and private institutions, 34 institutions used electronic portfolios, including TaskStream (22), LiveText (5), FolioTek (4), and TK20 (3); one institution reported using free software, Moodle. Some institutions also reported using a different package, including Chalk and Wire electronic portfolio software, TracDat, Google Sites, WordPress, Mahara, and one home-grown system.

The majority of respondents reported having used their current assessment systems for two years or longer (67%), while 25% reported having used their systems for one to two years. Eight percent reported using their software less than a year or reported that they have yet to implement a system.

When asked what resources support the assessment system, the majority (71%) reported that the survey completers themselves or personnel from the teacher education unit provide support for the assessment system, while half reported that the vendor of the software provides support to users directly or that the institutions provide instructional handouts for users. Approximately one-third (36%) reported receiving support from unit or campus instructional or institutional technology departments and live workshops, while less than one-third reported support websites, instructional videos, or webinars. Figure 4 represents the perceptions by North Carolina institutions of the adequacy of software that is utilized for their assessment systems. Eighty-four percent

Figure 1
Percent of Time Devoted to Data Management, Spring 2012

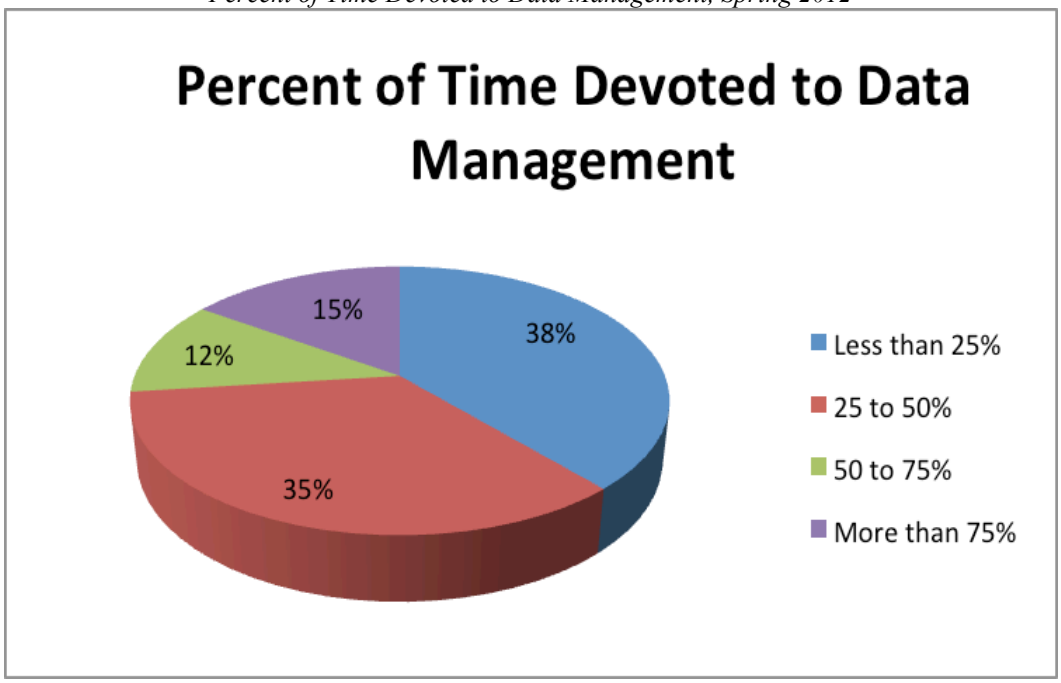


Figure 2
North Carolina Institutional Perception of Adequacy of Personnel Assistance, Spring 2012

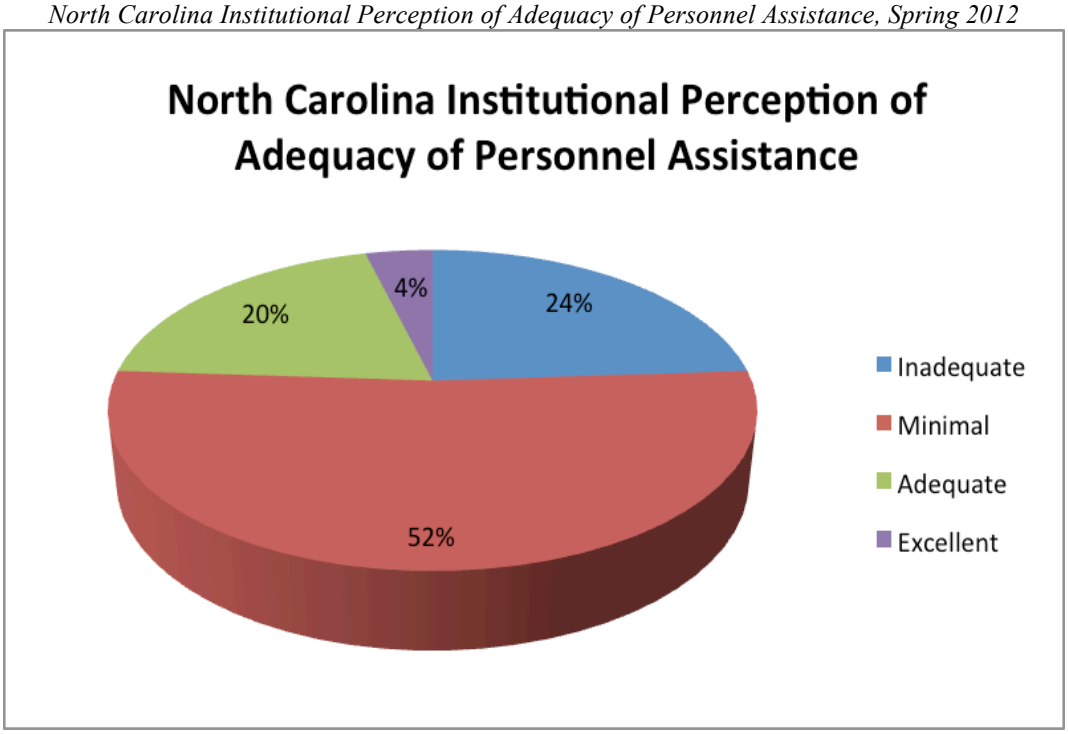


Figure 3
Software Utilized by North Carolina Institutions for Assessment Systems, Spring 2012

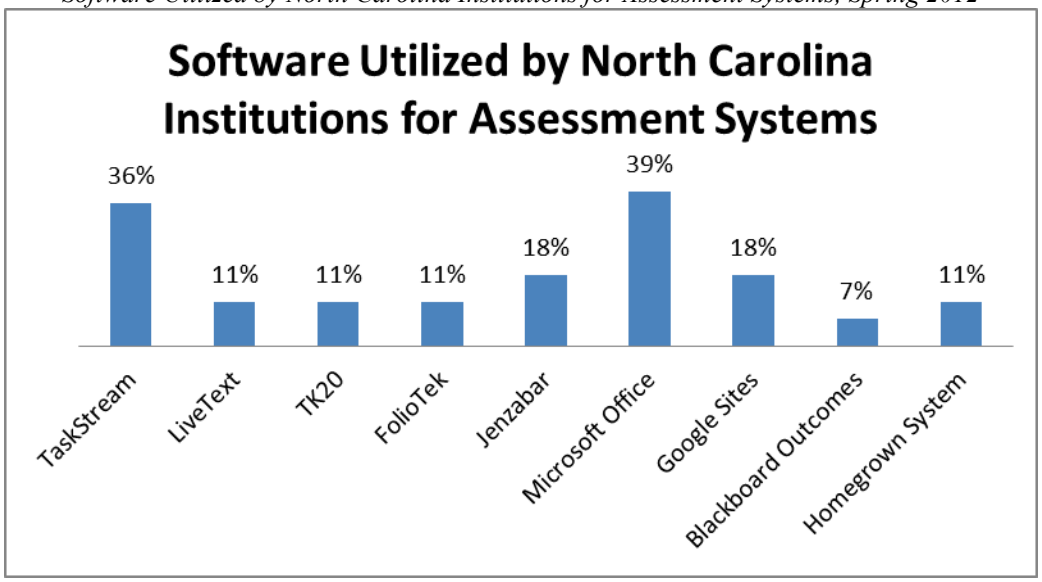
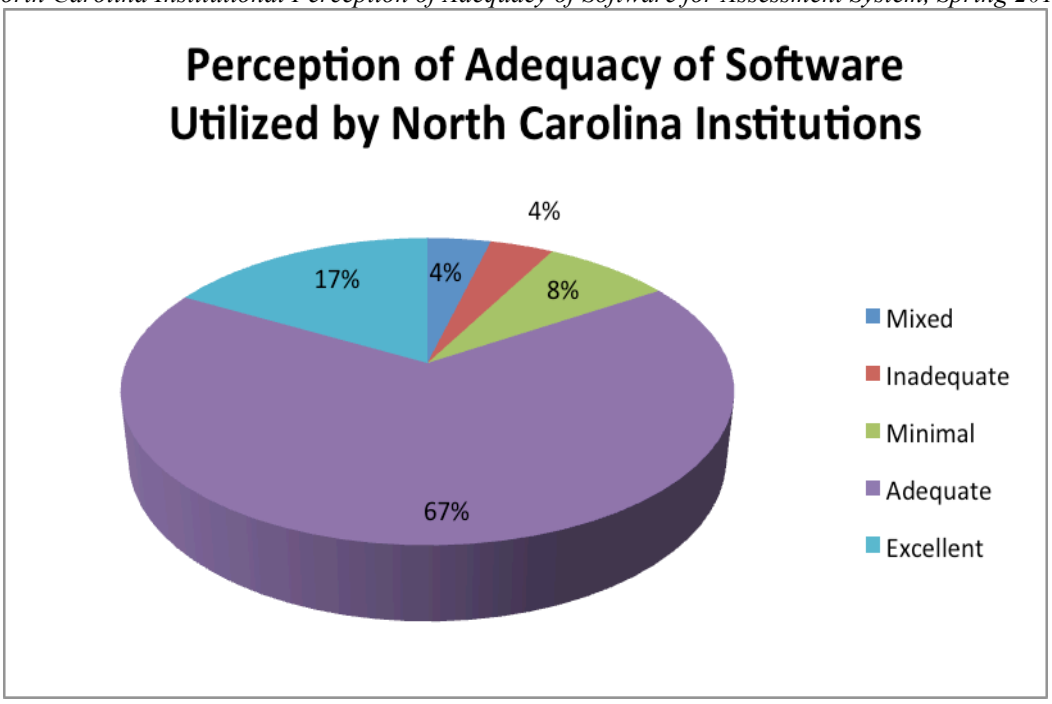


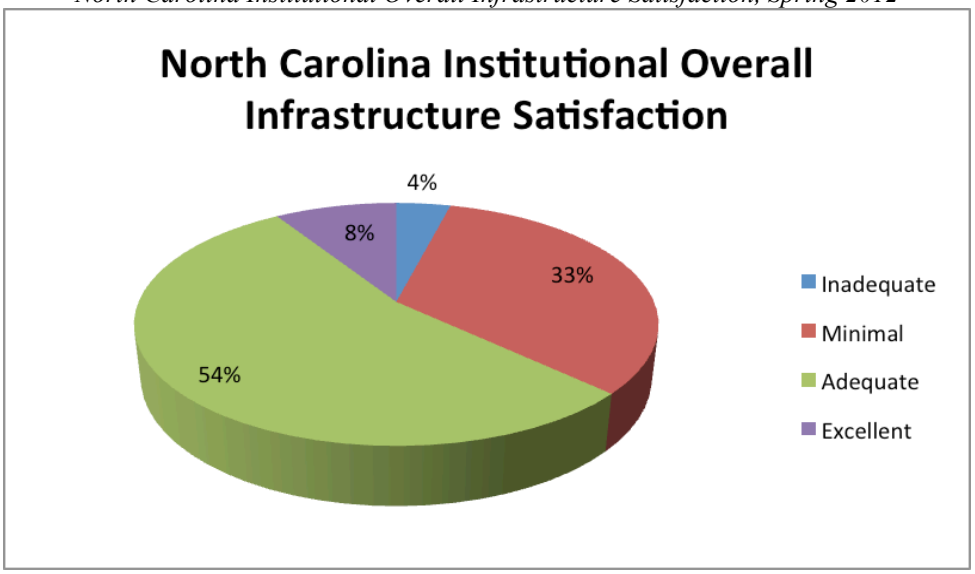
Figure 4
North Carolina Institutional Perception of Adequacy of Software for Assessment System, Spring 2012



reported that the software utilized by North Carolina institutions for their assessment systems is excellent or adequate.

Survey participants were asked about their overall satisfaction with the current infrastructure of the assessment system for data collection, data management, analysis, and reporting. As seen in Figure 5, over half (54%) reported their infrastructure as being adequate, while 33% reported their overall satisfaction as minimal with the current infrastructure, which was seen as either barely coping with or as not meeting the increased demands. Only 8% reported their infrastructure as excellent.

Figure 5
North Carolina Institutional Overall Infrastructure Satisfaction, Spring 2012



Finally, survey participants were asked to rate the level of need for resources to support the assessment system as high, moderate, or low. The majority of those responding reported a moderate to high need for support for system administrators (62%), more support for users of the system (75%), more personnel (83%), and more assistance from faculty (58%). While survey respondents rated several resources as moderate or high need areas, they also rated several resources as a low need or as not needed for institutions, including better software functionality (54%) and better hardware (50%).

Differences by Type of Institution

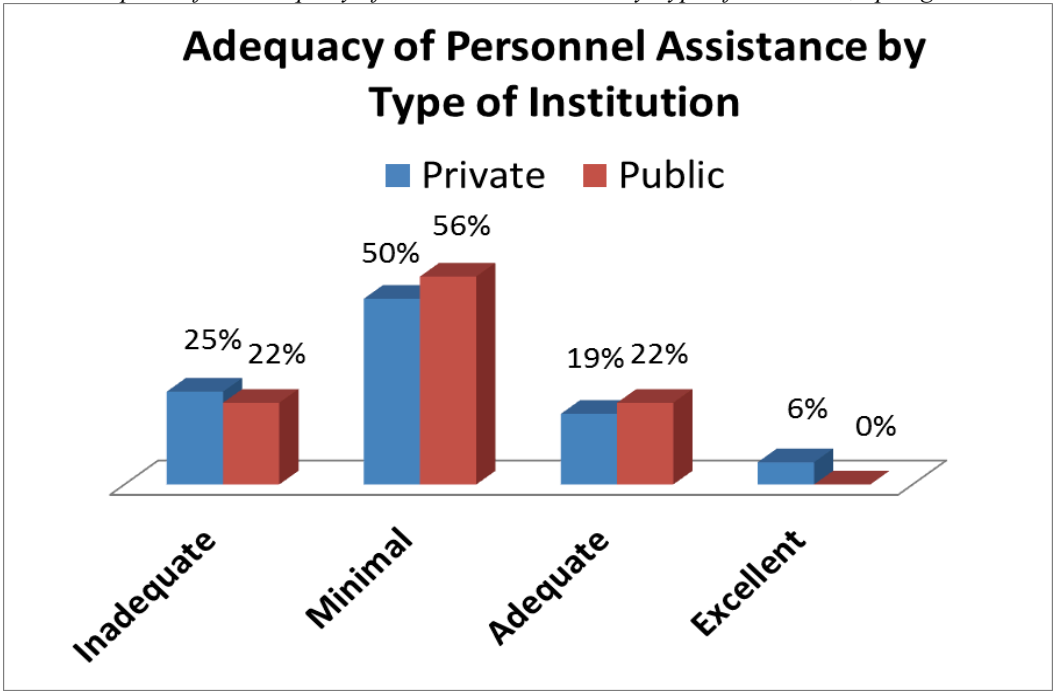
Although public and private institutions have similar concerns, there were differences in response between public and private institutions. The infrastructure for assessment processes of public and private institutions varies considerably. Public institutions were much more likely to have their assessment infrastructure located in a school or college of education (91%), while 59% of private institutions reported the same. All those responding from public institutions reported their roles as either technology and assessment coordinators or directors, while no one completing the survey from the private institutions reported as being in those roles. Fifty percent of private institutions reported their roles as department chair or teacher education director, dean, associate dean, or assistant dean, 25% reported their roles as faculty, and 19% reported their roles as administrative assistants.

Smaller private institutions are more likely to have personnel serving in multiple roles. While half of public institutions reported that 50% or more of their time is devoted to data collection, management, analysis, and reporting, half of private institutions reported that they spent less than 25% of their time devoted to the same duties in their current role.

While 50% of both public and private institutions reported having one teacher education director, public institutions were much more likely to report associate and assistant deans as being involved with the assessment system. When asked about their perception of the adequacy of personnel assistance for data collection, management, analysis, and reporting, 56% of public and 50% of private institutions reported their personnel assistance as minimal, indicating that their current personnel are stretched to meet current demands and could not meet increased demands. Figure 6 shows the differences in public and private response for personnel assistance for data collection, management, analysis, and reporting.

Public and private institutions vary in their response concerning the type of software that they use for their assessment systems. While both public and private institutions use TaskStream, TK20, FolioTek, Microsoft Word, Excel and Access, or homegrown systems, several software systems were reported as being used only in specific public or private institutions. Private institutions reported using Jenzabar, LiveText, Digication, Google, and Blackboard Outcomes, while public institutions reported using TracDat, Weave, and Digital Measures as part of their assessment system. Seventy-eight percent of public and 60% of private institutions reported using their assessment system software for two years or more.

Figure 6
Perception of the Adequacy of Personnel Assistance by Type of Institution, Spring 2012



Public and private institutions both provide similar support for their assessment systems. Fifty-four percent of public institutions support their assessment systems through the software vendor, while 47% of private institutions reported the same. Over 70% of both public and private institutions reported that the survey respondent or personnel from the teacher education unit provides support for the assessment system. Private institutions differ from public institutions in support from Institutional Technology (IT) resources. Forty-one percent of private institutions reported using their campus IT units, while only 9% of public institutions reported the same. One-third or less of both public and private institutions reported using websites, instructional videos, live workshops, or webinars as supporting resources for their assessment system. When asked about their perception of the adequacy of current primary software for data collection and management of the assessment system, all public institutions reported their software resources as adequate or excellent, while 73% of private institutions reported the same. Twenty-six percent of private institutions reported minimal, inadequate, or mixed adequacy in rating the current primary software of their assessment system.

Both public and private institutions described their overall satisfaction with their current infrastructure for data collection, management, analysis, and reporting as adequate or minimal. About half of private institutions reported their satisfaction as adequate (47%) or minimal (40%), while most public institutions reported their satisfaction as adequate (67%) or minimal (22%). Figure 7 shows public and private institutional satisfaction with their current institutional infrastructure for data collection, management, analysis, and reporting.

Finally, institutions were asked about their level of need for increased resources. While both public and private institutions reported a moderate to high need for more support for users (78% and 73% respectively) and more personnel (public 67%, private 53%), responses varied for other moderate to high needs, including more support of system administrators (public 78%, private 53%) and assistance from faculty (public 89%, private 50%). Small private institutions were more likely to report system administrators as being not applicable to their institution. The authors speculate that the larger an institution, the more removed faculty are from the data collection and reporting process because more personnel resources are available to assist in the collection, reporting, and managing of data. Private institutions, by contrast, typically have personnel, many of them faculty, who serve in multiple roles, including the collection, reporting, and managing of data. Figure 8 shows public and private responses for the need for more assistance from faculty.

Figure 7

North Carolina Institutional Overall Satisfaction of Institution Infrastructure, Spring 2012

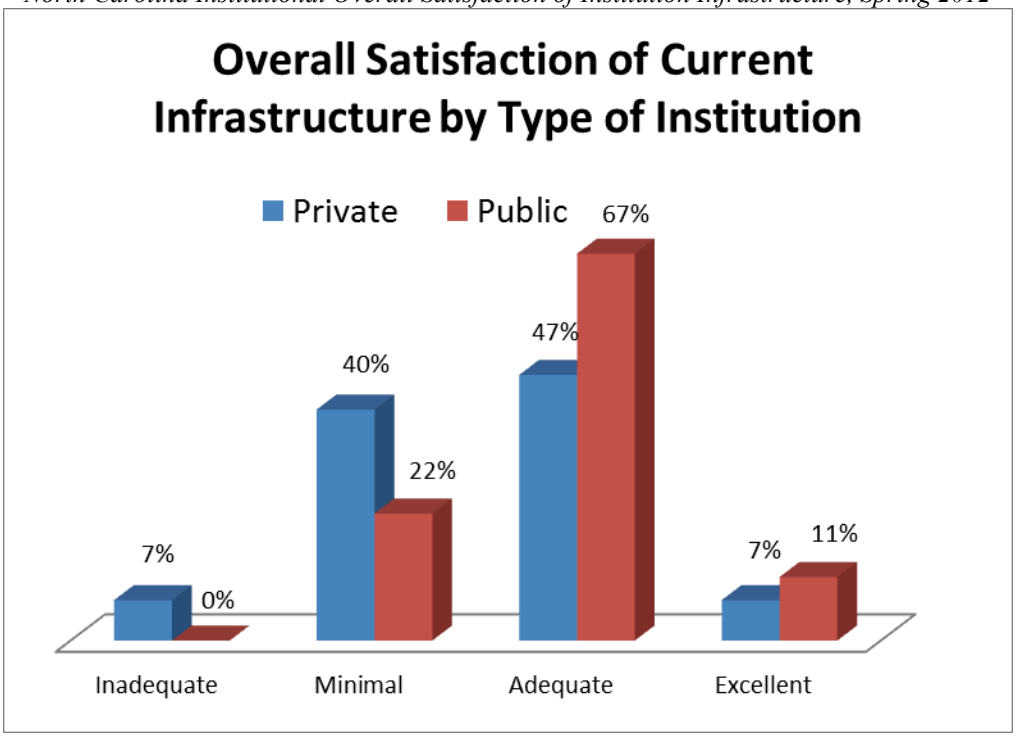
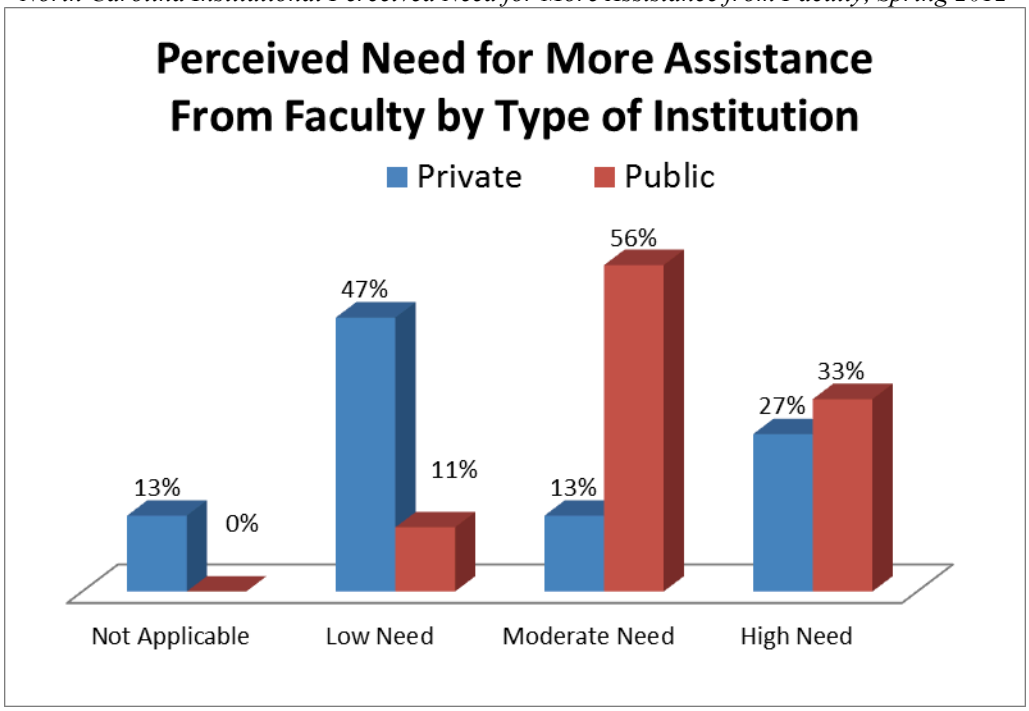


Figure 8

North Carolina Institutional Perceived Need for More Assistance from Faculty, Spring 2012



Summary and Conclusions

A few conclusions can be drawn from the data. Teacher preparation institutions in North Carolina have minimal to adequate overall infrastructure to collect and manage the current data demands for program approval and accreditation. This finding was expected, given the coincidence between increased demands for data in recent years and the economic downturn that since 2008 has seriously impacted institutional budgets. Private institutions expressed less satisfaction with overall infrastructure than did public institutions:

1. Teacher preparation institutions in North Carolina are generally satisfied with the software they are using to collect and manage data, and most have been using their current software for two or more years. Both independent and public institutions saw a relatively low need for better software, indicating that they were satisfied with the software packages that they were using. Regarding software support for assessment systems, both public and private institutions indicated that either the person completing the survey or someone in the teacher education unit acted as the primary support for the assessment system. Similarly, both public and private institutions used support from third-party vendors, instructional handouts, and live workshops. Private institutions differ in that they are more likely to use their campus IT units and webinars for support, while public institutions reported not utilizing their campus IT resources and using fewer webinars. Related to software, public institutions reported low or no need for hardware, while almost half of private institutions reported a moderate or high need.
2. Private and public institutions expressed a high need for personnel and moderate to high need for more support for users. Both private and public institutions identified that their primary need for resources was personnel (private IHEs, 53%; public IHEs, 67%). Both private and public institutions expressed a moderate to high need for support for users. The survey did not ask institutions to identify whether the need for support was primarily for students, faculty, or other users, such as PreK-12 school partners. Again, it is not surprising to see both public and private institutions reporting a need for more personnel given that many support staff and administrator job positions have been eliminated since the budget cuts began in 2008. Both public and private institutions also identified a high or moderate need for more support for system administrators (public IHEs, 78%; private IHEs, 53%).
3. Private and public institutions expressed different needs for better resources to meet data demands for teacher preparation program approval and accreditation. Private institutions identified a need for better hardware; public institutions identified a need for more support from faculty. While smaller private institutions may have faculty serving in multiple roles to support teaching and the assessment system, public institutions are more likely to have technology and assessment coordinators that support data collection and management, leaving faculty potentially more isolated from the data collection and management processes.

These results show that most teacher education programs in North Carolina have a minimal to adequate assessment system to meet current accreditation demands, though it is noted that a few do not even have a minimal level of capability. Public and private institutions differ in some ways in their needs, possibly reflecting the different sizes and natures of these institutions. However, the data overall reflect a need for more personnel assistance to support the institution's assessment system; thus, a future increase in demands for teacher education data without additional resources will strain institutions' ability to meet these demands.

In particular, private institutions in North Carolina are funded differently from public institutions. Privates are funded through small state stipends, tuition, endowments, and possibly grants, while public institutions have a more stable funding model. Personnel are more likely to serve in multiple roles within the private college or department, leading the authors to speculate that additional reporting requirements with limited resources will further strain their infrastructure.

It should be noted that this survey took place in the context of a statewide pilot study of a single academic program (i.e., elementary education), in which data from only one or two teacher candidates was required to be presented. Infrastructure demands for this process will increase in the coming years as it includes more candidates across more programs. In addition, the state is moving to a system of using longitudinal data in conjunction with candidate data, emphasizing performance in field and clinical settings and impact on PreK-12 student performance. Further, all teacher preparation institutions in North Carolina are required to maintain national accreditation, and this process becomes uncertain as the two major teacher education

accreditors (NCATE and TEAC) merge to form one unit (CAEP).

In light of this context in North Carolina, our state IHEs must invest more resources, particularly personnel, in their assessment systems to even maintain their current capacity for accreditation reporting. Given the scrutiny of teacher education nationally, it has become even more critical for teacher education preparation programs to invest wisely in resources for data collection, reporting, and management in order to demonstrate high-quality teacher education preparation and candidate performance. If the resources cannot be made available or demands for data collection, storage, and reporting increase beyond current predictions, some IHEs may not be able to provide all that is required. In the worst case scenario, quality programs may have to close because of a lack of resources to maintain accreditation. To add to the problem, in the past decade in North Carolina, there has been a teacher shortage, and North Carolina IHEs who supply teachers have not been able to meet even the current demand for public school teachers. With the potential of IHEs closing teacher education programs because of a lack of resources to maintain accreditation, the authors speculate that in the future the demand for public school teachers will increase, especially in the critical need areas of math, science, special education, and middle grades. The authors also speculate that smaller private institutions with small enrollments in teacher education are particularly vulnerable because they lack the resources necessary to maintain accreditation. Further research studies by type of institution and program would provide more insight into the resiliency of assessment systems and their ability to meet potential future demands and maintain stability of teacher education programs in the future.

References

Brophy, J., & Good, T. (1986). Teacher behavior and student achievement. In M. Wittrock (Ed.), *Handbook of research on teaching* (pp. 328-375). New York, NY: MacMillan.

Brown, G., Chen, H., & Jacobson, J. (2012, June). ePortfolios changing the learning context: The AAEEBL survey report 2011. *The AAEEBL Learner, 3*(3), 1-12.

Coupland, D. B. (2011). The cost of accreditation: Hillsdale ends its teacher certification program. *Academic Questions, 24*(2), 209-221. doi:10.1007/s12129-011-9225-z

Darling-Hammond, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Educational Policy Analysis Archives, 8*, 1-48. doi:10.1177/089590480001400l013

Everhart, B., & Gerlach, J. (2011). The perception of unit heads toward the role of online assessment products in standards-based alignment within teacher education units. *Education, 132*(1), 97-109.

Fiedler, R. L., Mulligan, L., & Finnegan, M. (2009). Portfolios in context: A comparative study in two preservice teacher education programs. *Journal of Research on Technology in Education, 42*(2), 99-122.

Imhof, M., & Picard, C. (2006). Views on using portfolios in teacher education. *Teaching and Teacher Education, 25*(1), 149-154. doi:10.1016/j.tate.2008.08.001

Ingersoll, R., Merrill, L., & May, H. (2012). Retaining teachers. *Educational Leadership, 69*(8), 30-34.

Kirchner, A. (2012). *Evaluation of electronic assessment systems and their ability to meet NCATE standard 2* (Doctoral dissertation). Retrieved from http://digitalcommons.wku.edu/diss/20

Levine, A. (2006). Will universities maintain control of teacher education? *Change*, *38*(4), 36-43. doi:10.3200/CHNG.38.4.36-43

Martindale, M., & Bartell, C. A. (2010). State and national accreditation of one university program: A case study. *The Volta Review, 110*(2), 249-260.

National Council for the Accreditation of Teacher Education (NCATE). (2002). *Professional standards for the accreditation of schools, colleges, and departments of education: 2002 edition*. Washington, DC: NCATE.

National Council for the Accreditation of Teacher Education (NCATE). (2008). *Professional standards for the accreditation of teacher preparation institutions*. Washington, DC: NCATE.

Osguthorpe, R. D. (2008). On the reasons we want teachers of good disposition and moral character. *Journal of Teacher Education, 59*(4), 288-299. doi:10.1177/0022487108321377

Pecheone, R. L., Pigg, M. J., Chung, R. R., & Souviney, R. J. (2005). Performance assessment and electronic portfolios: Their effect on teacher learning and education. *The Clearing House, 78*(4), 164-176. doi:10.3200/TCHS.78.4.164-176

Prus, J. S., & Strein, W. (2011). Issues and trends in the accreditation of school psychology programs in the United States. *Psychology in the Schools, 48*(9), 887-900. doi:10.1002/pits.20600

Sanders, W. L., & Horn, S. P. (1998). Research findings from the Tennessee Value-Added Assessment System (TVAAS) database: Implications for educational evaluation and research. *Journal of Personnel Evaluation in Education, 12*, 247-256. doi:10.1023/A:1008067210518

Sandford, J. (2012, February 2). Montreat cuts classes, staff. *Asheville-Citizen Times*. Retrieved from http://www.citizen-times.com

Schacter, J., & Thum, Y. M. (2004). Paying for high- and low-quality teaching. *Economics of Education Review*, *23*, 411-430. doi:10.1016/j.econedurev.2003.08.002

Thompson, F. (2009). The development and validation of the multicultural dispositions index. *Multicultural Perspectives*, *11*(2), 94-100. doi:10.1080/15210960903028776

Tucker, M. (2011). Teacher quality: What's wrong with the U.S. strategy? *Educational Leadership, 69*(4), 42-46.

RENEE CORBIN is the Director of Assessment in the College of Education and Allied Professions at Western Carolina University. She supports the NCATE accreditation process through the collection, management, and reporting of assessment data. Her interests include electronic assessment systems and the ways in which the systems support assessment of student learning. She is also the co-coordinator of the state-wide North Carolina Teacher Education Assessment Network (NCTEAN).

C. DALE CARPENTER, EdD, is the Interim Dean and Professor of Special Education of the College of Education and Allied Professions at Western Carolina University. He teaches courses in assessment and is a member of the Board of Examiners for NCATE. He has been instrumental in the development of the state program approval process in North Carolina.

GEORGE (LEE) NICKLES, PhD, is the Assistant to the Dean for Technology and Curriculum in the College of Education and Allied Professions at Western Carolina University. He provides technology consultation and support and administers the college's ePortfolio system in TaskStream. His interests include the study of educational systems, educational technology, and the design of learning spaces.

Appendix
WCU Capacity Research Study Spring 2012

The purpose of this brief survey is to ascertain the current infrastructure in North Carolina teacher preparation units to support required program approval and accreditation efforts and to survey perceived resource needs. Results will be reported in summary and you may receive a copy of the results if you will provide your email address at the end of the survey. Your information is confidential and you will not be identified in any way. Participation is voluntary and survey data will be stored on a secured website with a username and password. The survey should only take three minutes of your time and if you have questions or comments about the survey, please contact Dr. Dale Carpenter at 828-227-3328. Your response is greatly appreciated. There are no foreseeable risks for participating in the survey. If you have concerns about your treatment as a participant in this study, contact the chair of WCU's Institutional Review Board through the office of Research Administration at WCU (828-227-7212).

Please describe your college or university:

- ❍ Public 4 year university or college
- ❍ Private 4 year university or college
- ❍ Other, Please list _____

Which best describes where teacher education is located in your institution?

- ❍ School or College of Education
- ❍ Department within Arts and Sciences
- ❍ Department located elsewhere
- ❍ Program within a department
- ❍ Other, Please list below _____

PERSONNEL Which best describes your primary role?

- ❍ Faculty member
- ❍ Technology coordinator/director
- ❍ Assessment coordinator/director
- ❍ Department chair/teacher education director/dean/assistant dean/associate dean
- ❍ Administrative assistant
- ❍ Other, Please list below _____

Approximately what percentage of YOUR time is devoted to data collection, management, analysis, and reporting related to program approval and accreditation efforts?

- ❍ Less than 25%
- ❍ 25 to 50%
- ❍ 50 to 75%
- ❍ More than 75%

Please identify others besides yourself who are DIRECTLY involved in data collection, management, analysis, and reporting related to program approval and accreditation efforts. In the second column identify whether others are devoted full-time or part-time to accreditation efforts. If the role listed does not apply to your accreditation efforts, click on "N/A" for Not Applicable.

	Number of People							Full-time or Part-Time	
	0	1	2	3	4	>4	N/A	Full-time	Part-time
Administrative Assistant	❍	❍	❍	❍	❍	❍	❍	❍	❍
Technology Coordinator	❍	❍	❍	❍	❍	❍	❍	❍	❍
Assessment Coordinator	❍	❍	❍	❍	❍	❍	❍	❍	❍
Dept. Chair	❍	❍	❍	❍	❍	❍	❍	❍	❍
Teacher Education Director	❍	❍	❍	❍	❍	❍	❍	❍	❍
Dean	❍	❍	❍	❍	❍	❍	❍	❍	❍
Associate Dean	❍	❍	❍	❍	❍	❍	❍	❍	❍
Assistant Dean	❍	❍	❍	❍	❍	❍	❍	❍	❍
Student Assistant	❍	❍	❍	❍	❍	❍	❍	❍	❍
Other, Please list below	❍	❍	❍	❍	❍	❍	❍	❍	❍

Indicate YOUR perception of the adequacy of personnel assistance for data collection, management, analysis, and reporting related to program approval and accreditation efforts.

- ❍ Excellent - exceeds current requirements and would meet increased demands
- ❍ Adequate - good match with current requirements
- ❍ Minimal - current personnel are stretched to meet current demands and could not meet increased demands
- ❍ Inadequate - personnel are not adequate to meet current requirements

SOFTWARE What software do you use for data collection, management, analysis, and reporting related to program approval and accreditation efforts? Check all that apply.

- ❑ TaskStream
- ❑ LiveText
- ❑ TK20
- ❑ Chalk and Wire
- ❑ FolioTek
- ❑ Nuventive iFolio
- ❑ Jenzabar
- ❑ Microsoft Word or Excel or Access
- ❑ Digication

- ❑ Google Sites
- ❑ Moodle
- ❑ Mahara
- ❑ TracDat
- ❑ WordPress
- ❑ WEAVE
- ❑ Xitracs
- ❑ Compliance Assist
- ❑ Digital Measures
- ❑ BlackBoard Outcomes
- ❑ Dataliant
- ❑ Homegrown System
- ❑ Other _____

How long have you been using your primary assessment system software?

- ❍ 2 years or more
- ❍ 1-2 years
- ❍ Less than 1 year
- ❍ Have yet to implement software

Check all methods you use to support your local users for your primary assessment system software (faculty and students):

- ❑ Vendor provides support to users directly
- ❑ Campus IT department
- ❑ Unit IT department
- ❑ You or personnel from your teacher education unit
- ❑ Support website
- ❑ Social media
- ❑ Instructional handouts
- ❑ Instructional videos
- ❑ Live workshops
- ❑ Webinars
- ❑ Other _____

Indicate YOUR perception of the adequacy of your current primary software for data collection, management, analysis, and reporting related to program approval and accreditation efforts.

- ❍ Excellent - exceeds current requirements and would meet increased demands
- ❍ Adequate - good match with current requirements
- ❍ Minimal - current software is barely coping and could not meet increased demands
- ❍ Inadequate - current software is not adequate to meet current requirements
- ❍ Mixed - current software may be adequate but has not been proved to be helpful thus far

INFRASTRUCTURE Describe your overall satisfaction of the current infrastructure for data collection, management, analysis, and reporting related to program approval and accreditation efforts.

- ❍ Excellent - exceeds current requirements and would meet increased demands
- ❍ Adequate - good match with current requirements
- ❍ Minimal - current infrastructure is barely coping and could not meet increased demands
- ❍ Inadequate - current infrastructure is not adequate to meet current requirements

Given your current system, indicate the areas where your teacher education unit needs to increase resources to meet (or exceed) your requirements:

	High Need	Moderate Need	Low Need	No Need	Not Applicable
More support for system administrators	❍	❍	❍	❍	❍
More support for users	❍	❍	❍	❍	❍
More personnel	❍	❍	❍	❍	❍
Better software functionality	❍	❍	❍	❍	❍
More assistance from faculty	❍	❍	❍	❍	❍
More training/consultation	❍	❍	❍	❍	❍
Better hardware	❍	❍	❍	❍	❍
Other	❍	❍	❍	❍	❍

Overall Comments. Please provide any comments below you wish to elaborate on from your responses to any of the questions in the survey.

If you wish to receive a copy of the survey results, please provide an email address where we may email a copy of the results.

Thank you for completing the survey!

International Journal of ePortfolio
http://www.theijep.com

2013, Volume 3, Number 1, 63-73
ISSN 2157-622X

Skills Recognition for the Rural Sector – Coming to a Screen Near You

Charlie Bell and Julie White
Tocal College

Tocal College, as part of New South Wales Department of Primary Industries (DPI), provides training in agriculture and related disciplines across NSW and Australia. Tocal College delivers a wide range of full time, short course, and distance education courses, along with publications and study support materials. The rural and related industries in Australia operate in a complex environment and have many features which make training delivery unique and challenging. A particular challenge is servicing a clientele who are thinly dispersed over a very large part of Australia and providing relevant services to clients who have high levels of skills and knowledge acquired on the job through informal learning. As a consequence of these needs, external delivery of training and Skills Recognition (i.e., Recognition of Prior Learning [RPL]) have emerged as a key services delivered by the College. This paper will outline the development of the Tocal College Skills Recognition system from a paper-based to fully electronic system while maintaining a commitment to assessment by personal interview, client support, empowerment and respect, and active case management. The process of "going electronic" is evaluated from both the client and college perspective. The ePortfolio approach is proving to be a better way of delivering services, but it does still present some challenges to clients in regional and remote areas of Australia.

An Overview of Tocal College Education Programs

Tocal College was established by the Presbyterian Church at Paterson in the Hunter Valley of New South Wales in 1965 as a specialist vocational college, with a focus on training workers for farming and farm management. The College was taken over by the Department of Agriculture in 1970 and has been operated by that department and its successors to the present day. Over the years, the College's range of activities has expanded dramatically from the initial focus on full-time residential training to include provision of training and other RTO services to all sectors of agriculture and land management, across NSW and nationally.

Tocal College now has two Campuses – C. B. Alexander Campus at Paterson and Murrumbidgee Rural Studies Centre situated at Yanco in the Riverina, including staff at four other country locations in NSW. The college now offers the following training products and services:

1. full-time residential training at Certificate II and Certificate IV level. These are courses aimed at training operational and supervisory level workers under the Australian Qualifications Framework (Australian Qualifications Framework Council, 2011),
2. Diploma of Agriculture and Diploma of Conservation and Land Management (Australian Qualifications Framework Council, 2011) by e-learning and Home Study,
3. traineeships delivered by Block Release at the Paterson campus and through flexible delivery state-wide,
4. short courses in a wide range of areas, delivered via the NSW DPI PROfarm program (see http://www.dpi.nsw.gov.au/agriculture/profarm),
5. publications (see http://www.tocal.nsw.edu.au/publications), and
6. tailored industry and community training courses addressing a wide range of requirements.

Adult and continuing education has grown to be the major function of the college, with over 450 full qualifications and Skills Sets awarded in 2012 (Tocal College, 2011).

In Australia, agriculture does not have a strong culture of formal training, and qualifications are not a barrier to entry. The rural sector in Australia has been well supported over the years by relatively well funded public sector research and advisory services, which have helped to improve the skills base in the industry and have driven productivity improvements (Bell & Bayley, 2011). This strategy of extension and advisory services for the rural sector has been successful in improving practice in the industry, but has resulted in little emphasis on formal training and credentials. As a result, Australia has one of the lowest levels in the developed world of farmers and farm workers holding post-secondary qualifications (Australian Bureau of Statistics, 2002; National Centre for Vocational Education and Training, 2011). This does not necessarily mean that Australia's farm workforce is less skilled than that of other nations (our efficiency and production records would indicate otherwise), but it does confirm that the skills and knowledge have been acquired through "non-formal" learning mechanisms that are not recognized as a Qualification.

In the 1990s, Australia adopted a standardized national training system that allowed the development of nationally recognized vocational Qualifications based on agreed competency standards, called Units of Competence, which are endorsed under nationally recognized Training Packages (Guthrie, 2009). The reform of the Australian training system also included a move away from traditional, "time served" models of training to assessment based on objective criteria. The adoption of this nationally consistent training system, with qualifications underpinned by Units of Competence, has been the basis for development of objective assessment systems and tools to allow Recognition of Prior Learning or Skills Recognition to be delivered to clients in the rural sector, thus enabling their workplace skills and knowledge to be formally recognized and accredited.

The Importance of Skills Recognition

Development of Skills Recognition services by Tocal College for industry arose in response to the situation in the rural sector, the skills of whose workforce have been acquired through mainly non-formal means. The philosophy driving the adult and continuing education functions of the college is founded on the premise that best way to deliver services to this sector is to start with a skills-recognition process or skills audit to recognize and accredit existing skills and knowledge and, at the same time, identify training needs. Subsequently, an individual program can be designed for the learner to address any skill or knowledge gaps. This stems from the underlying assumption that adults are not "empty vessels" (Freire, 1996) but come to the study process with a large and varied repertoire of skills and knowledge acquired through previous experience and study. A "one size fits all" approach to training delivery is an inappropriate and inefficient way of delivering outcomes.

At Tocal College, Skills Recognition has been integrated progressively into the culture of training delivery since 1996. Tocal College staff view Skills Recognition as the starting point for most adult education. The development of this culture, policies, and procedures has taken place while managing the inherent tension between employing flexible and achievable forms of evidence and meeting the needs of compliance, rules of evidence, and audit.

Applications of Skills Recognition

Workforce Development

Recognition programs have been delivered across all states of Australia for very diverse groups of candidates. In many cases, the college has worked with industry peak bodies that represent the interests of a particular industry or sector, and with Agrifood Skills Australia. Some examples are:

1. Local Government Noxious Weeds Officers in NSW,
2. farm workers in all industry sectors (e.g., livestock, cropping, horticulture, and forestry),
3. biosecurity and regulatory staff in the public sector,
4. staff in Catchment Management Authorities,
5. indigenous community members in Western Australia and Northern Territory, and
6. wholesale and retail nursery operators.

Industry Accreditation Schemes

An innovative application of Skills Recognition has been the development of a number of Industry Accreditation programs. Some successful programs have included: AgCredited, Certified Cotton Best Management Practice Manager, Certified Irrigation Agronomist, Accreditation of Saleyard Operators, and Certificate IV in Workplace Training and Assessment.

1. AgCredited: a professional accreditation scheme for Australian Institute of Agricultural Science and Technology;
2. Certified Cotton Best Management Practice Manager: this accreditation will become standard for managers within the industry (Hickman & Dugdale, 2007; Hickman 2011);
3. Certified Irrigation Agronomist: delivered in association with Irrigation Australia to assess and accredits best practices in irrigation management (Irrigation Australia, 2011);
4. Accreditation of Saleyard Operators: Tocal College is assisting Australian Livestock Markets Association members to meet environmental, animal welfare, and workplace safely requirements and identify training needs of staff (Archer, 2011); and
5. Certificate IV in Workplace Training and Assessment: offered by both training and Skills Recognition to professionals throughout NSW. Skills Recognition for Certificate IV Business has also been used to complement career development programs within NSW DPI itself.

The Tocal Skills Recognition Model

Philosophy of Assessment

There are some underlying principles framing the Tocal Skills Recognition process (Bell, 2009):

- Skills Recognition assessment is carried out using holistic assessment processes. Great emphasis is placed on collecting a wide range of evidence and looking at the big picture of a candidate's competence;
- Skills Recognition is done for the candidate by college staff. Candidates are not expected to interpret units of competence and training packages and are guided through each step of the process. Tocal staff take the view that "we are the assessors; we know the qualification and units of competence; we know what competence looks like and we know what evidence we need to collect as proof of competence";
- Workplace interview is the preferred mode of assessment. While some candidates do prepare and submit written cases, they constitute only a few percent of the total. An interview carried out in the candidate's workplace is the most effective as, in most cases, the bulk of the evidence of competence is located in the workplace. This ranges from documentation to physical examples of work completed to practical demonstrations. In the case of many farmers, their farm is their evidence;
- Workplace interviews are always carried out by two assessors. These assessors may both be college staff members, or one may be a designated subject matter expert;
- The candidate is "assumed competent until proven otherwise." Rather than starting with the assumption that the candidate must prove to the assessors that they are competent, Tocal assessors approach the assessment process with the view that their role is to assist and facilitate the candidates' demonstration of their competence. Through that process, assessors and candidates collect evidence of competence and identify any skills gaps. If gaps are identified, a plan is developed to address them by additional training, additional workplace experience, or a workplace project;
- Evidence collected by the workplace assessors is collated and summarized into a case for validation and approval. For most assessments for full qualification, the completed skills recognition case is reviewed by two college staff members with appropriate experience and knowledge. In some cases, an external technical reviewer may also be used. Only when approved by the validators is the case then submitted to the College Principal for final approval. Thus, all Skills Recognition cases are reviewed and assessed by at least four qualified college staff or technical experts; and
- The process complies with the National Principles and Operational Guidelines for Recognition of Prior Learning (Australian Qualifications Framework Council, 2007).

The thinking of Tocal Skills Recognition staff and the development of the Tocal recognition model are informed and supported by a variety of research published over the last 25 years. Many of the staff responsible for the development of the skills recognition program "cut their teeth" as youth educators in the Tocal College youth education program from the mid 1980s to the mid 1990s. During this period, the full-time Certificate programs at Tocal College were delivered using an innovative Problem Based Learning approach that was very holistic in its approach to delivery of training and assessment (Bell & Ryall, 1997; Drinan, Archer, Brouwer, Moller, & Walsh, 1985). Ideas from thinkers such as Freire (1972) in *Pedagogy of the Oppressed*, Knowles (1973, 1990) in his writings, and the body of research presented by Boud and Garrick (1999) and Boud and Felletti (1991) have underpinned and informed the development of skills recognition.

There has been abundant recent research reviewing the successes and failures of Competency Based Training and assessment that has also assisted Tocal College staff in monitoring and developing Skills Recognition. Of particular interest is the work of Smith and Clayton (2009). They found that:

> Successful access to the recognition pathway appears to be linked significantly to the possession of adequate literacy and communication skills. The companion issue here is that documentation and processes associated with the recognition of prior learning continue to be excessively complex and difficult to understand. (Smith & Clayton, 2009, p. 6)

This finding particularly confirms the value of the Tocal approach, in which "Skills Recognition is done for the candidate by college staff" who facilitate the process at all stages. Feedback from candidates after they complete a qualification or skill set through the Tocal Skills Recognition process consistently confirms that the process is simple and easy to understand.

Embedded in this process is the reflective dimension of portfolio development, which is of great importance to the candidates' learning. The process of conducting the assessment interview and collecting supporting evidence from which the ePortfolio is constructed is essentially reflective for the candidate. Candidates often express surprise and satisfaction when the body of evidence for the Skills Recognition assessment is compiled, discovering that "I know a lot

more than I thought I did." For many candidates, this is the first time they have formally reviewed and reflected on their life and work experience. While important, this is not the primary purpose of the Skills Recognition and ePortfolio development process.

Assessment Tools

Tocal College has developed assessment tools that interpret holistically the units of competence. These tools have evolved over the years, but the basic processes have not changed. The tools are designed to assist the candidate in preparing for the assessment interview and to guide the evidence collection process. The tools provide guidance for:

- a statement of relevant training,
- assessor observations and a record of dialogue at interview,
- third-party letters of support,
- a set of questions for the candidate to answer,
- suggestions for relevant items of documentary evidence, and
- a summary of life experience relating to the unit of competence.

These tools are supplied to the candidate prior to the workplace interview.

The Assessment Process

Figure 1 outlines the typical assessment process. While some cases are prepared in writing by candidates, the vast majority of Tocal College Skills Recognition cases follow this process.

Entering the Digital Realm

Skills Recognition has progressed over the past 16 years, from when the service was first introduced as a totally paper-based process to the current fully electronic process. This has been a gradual process as new technology has become available and viable to use in the field. Changes to the tools, processes, and procedures have also been driven by the increase in staff involved in skills recognition and the numbers of candidates being assessed. What started out as a simple system used by only one or two staff members assessing relatively small numbers of candidates has been changed dramatically with the increase in candidate numbers and subsequent growth of the staff team carrying out Skills Recognition. The stages of development are outlined in Table 1.

As can be seen in Table 1, the Tocal College application is a tool used by college staff to do skills recognition for the candidate. This approach is entirely consistent with the philosophy and practice of Skills Recognition, as implemented by the College since the commencement of the service. It aligns with Butler's (2006) definition of an ePortfolio as "essentially an electronic version of a paper-based portfolio, created in a computer environment, and incorporating not just text but graphic, audio, and video material as well" (p. 10). This definition of ePortfolios is consistent with the Tocal College application, whose main function is to replace paper-based systems. The Tocal system of utilizing ePortfolios neither depends on nor encourages candidate portfolio development. However, if candidates with sufficient interest and Information Technology (IT) skills choose to prepare and present their own portfolios, the college will accommodate their choice and use these portfolios in the assessment process. To do otherwise would be viewed as inefficient use of time and resources by both the candidate and college staff.

The ePortfolio compiled by Tocal College staff for each candidate is still regarded as the property of the candidate. While it is used internally for the assessment process, a copy is supplied to the candidate on completion of their qualification or skill set. This is currently supplied to graduates on compact disc (CD) when they receive their Transcript or Statement of Attainment. This is the most practical means of doing this as the file size is usually in excess of 25 megabytes, which makes electronic distribution unviable for rural and regional clients. It is our hope that graduates will be able to utilize the ePortfolio created for them by Tocal College staff in the advancement of their careers by using it as tool to demonstrate to potential employers the details of their skills and knowledge in a much more detailed manner than could an academic transcript. In this way, the ePortfolio can act as a "diploma supplement" (Bologna Process and Strategic Challenges, 2009).

The decision to introduce e-Skills Recognition (e-SR) was driven fundamentally by the availability of suitable tools. Tools need to be readily available, easy to use, reliable, and affordable. The enhancement of Adobe Acrobat's functionality with the introduction of version X Pro marked the point at which Tocal staff felt that it was viable to convert to an ePortfolio.

The other important tool that meets the requirement listed above is the iPad. iPad has been adopted as the preferred tool for photographing and recording evidence during the interview. The advantage of an iPad over a digital camera is the availability of applications for captioning and identifying evidence at the time of collection. This is a great advantage in ensuring that all documents and images are correctly identified and correlated to the appropriate unit of competence.

Figure 1
Tocal Skills Recognition Process

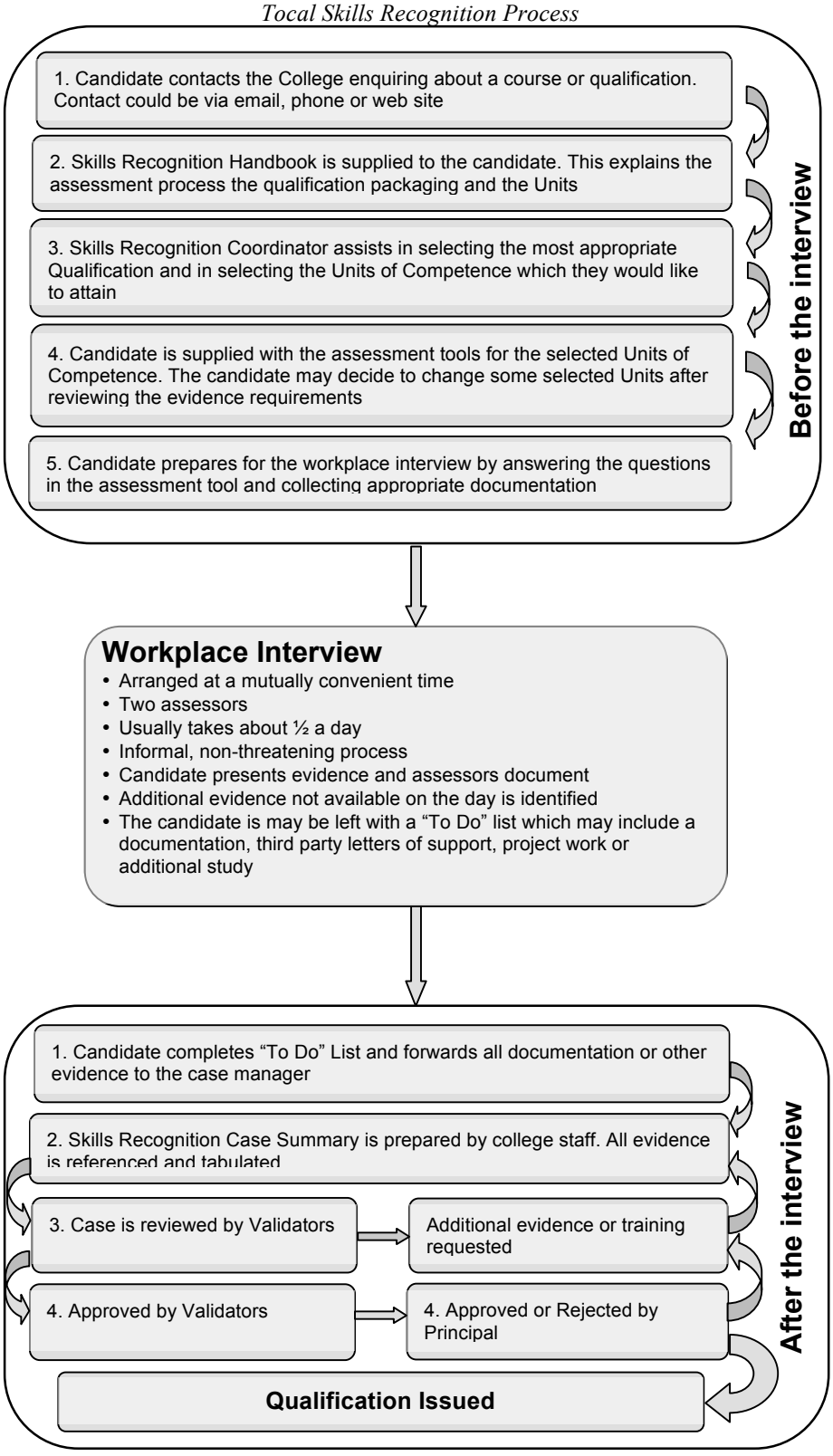


Table 1
The Evolution of the Tocal Skills Recognition Process

Period	Assessment tools used	Technology
1990s. Starting to do small numbers of recognition cases	• No tailored tools. Interpreting the Unit outline and using this to guide the candidate during assessment • Evidence often copied at the college and then returned to the candidate • Little guidance and support for the candidate	• Hand written notes • Photocopier – if available in the interview venue • Photo. Limited use of digital camera. • Most candidates had very poor or unavailable email and web services • Faxing documentation
1999 – 2003. Significant increase in demand for recognition services	• Adoption of the ASSESS format assessment tool (see *Appendix 1*) • Development of Skills Recognition handbook. • Case processing less formalized	• Some improvement in rural and regional web access • Electronic communications – email
2003 – 2006. Rapid growth	• Implementation of new Conservation And Land Management (RTD02) • Rural Production (RTE03) and Amenity Horticulture (RTF03) Training Packages ASSESS Sheets rewritten. • Tools developed for new qualifications • Development of standardized forms • Development of policies and procedures • Review and approval process standardized	• Handbook available for download from web site • Portable photocopier • More email used to communicate with candidates • Digital camera
2006 – 2009. System development. Integration of second campus.	• Further refinement of tools and forms	• Digital camera gradually replacing portable photocopier • Use of laptop to record notes during workplace interviews
2009 – 2011. Further growth in demand for recognition	• Further formalization and refinement of processes	• Digital camera used for all evidence recording during workplace interviews.
2012. e-assessment	• Implementation of AHC10 Training Package • Rewriting of ASSESS Sheet and conversion to new TOCAL format • Conversion of TOCAL Sheets to Editable PDF Forms for candidate completion using Acrobat Reader • All forms converted to Editable PDF format	• PDF Portfolio adopted as the standard for preparation and processing of Skills Recognition Cases • Adobe Acrobat X used to prepare Adobe Portfolio • iPad used for photographing and documenting all workplace evidence. iPad App "A+ Signature" is being used to label and document evidence. • Laptop used to record notes during workplace interviews. More document development taking place during the interview process • Moodle – assessment tools available to candidates on Tocal College Moodle site used by college staff to manage forms and documents • Manual/paper based system for preparation – distribution –review – approval of skills recognition cases discontinued and replaced with PDF Portfolio distribution • System for archiving PDF Portfolios developed • Candidates supplied with a copy of their PDF Portfolio on completion

Acrobat X Pro has been adopted as the platform used by all staff carrying out e-SR and was introduced in a pilot, with two of the most experienced skills recognition practitioners carrying out a trial to test and refine the processes. This has now been in use by College staff since March 2012 and has proved to be a success, albeit with some revisions and refinement along the way.

What are the Advantages and Disadvantages?

Table 2 describes advantages and disadvantages of ePortfolio for Tocal College and the candidate. The introduction of ePortfolios has opened up new possibilities for candidates in the process of preparing for the assessment interview. Candidates are asked to answer a set of questions (see Appendix and Tocal, 2012). These answers are recorded in a PDF form document and emailed back to the College for review prior to the interview. Candidates are also encouraged to send any documentary or photographic evidence they may have available in an electronic format. Collection and review of some evidence prior to the workplace interview does, in many cases, speed up the interview process and gives candidates a much better idea of what is expected from them to meet the requirement of the qualification.

Table 2
Advantages and Disadvantages of the Introduction of ePortfolio

	For Tocal College	For the Candidate
Advantages	• Ability to utilize a wider range of media for evidence collection: o Video o Audio • Greater efficiency in collection and collation of Skills Recognition evidence • Significant staff time saving in preparation of Skills Recognition cases. Some paper based processes have been eliminated • More efficient distribution of ePortfolio for review and approval • Ease of movement of documentation between campuses for review and validation • More efficient information management • Better access to archived material: o searchable for college staff o available for Audit • Improve version control for forms • Easier intercampus coordination • Electronic data storage will eliminate problems associated with storage of physical skills recognition	• Assessment tools available in electronic format • Can be accessed and worked on at any time • Electronic evidence collection and management during the workplace interview is virtually the same for the candidate as the paper based process • Candidate will receive a copy of their completed PDF Portfolio for their own use
Disadvantages	• Significant investment in new technology and software • Increased time for workplace interview in some cases. • Risk of data loss • Staff development cost in adopting new technology and systems • Bandwidth limitation for web access in some areas	--

The interview process remains essentially unchanged when using the electronic evidence collection system. The assessment interview, which is a structured conversation between the assessors and the candidate, usually takes about half a day. The approach adopted by Tocal College has been and remains relaxed and informal, and every effort is made to ensure that the candidate is at ease with the process. This process has been described as Competency Conversation or Conversational Interviewing (Dodwell, 2009). Candidates are encouraged to become participants in the process of building a picture of their competence by "telling their story" and identifying items of supporting evidence that can be collected and recorded using electronic files, images, video, and audio. Evidence is collected and collated using the tools described above, and a record of the interview is prepared by one of the assessment team continually throughout the interview process.

After the interview is completed, the candidate will usually be left with a "to-do" list of items of evidence that have been jointly identified and agreed upon during the interview. The main items of evidence that usually must be collected after the interview are references and third-party testimonials supporting the candidate's claims of competence. College staff usually prepare a template for these testimonials that is sent to the candidate, who in turn sends it for signing to the person providing the testimonial, by whom the letter is finally returned to the College. This process is now done entirely electronically, and the documents are included in the ePortfolio.

Conclusion

For Tocal College**, t**he adoption of e-Skills Recognition using ePortfolios has been an evolutionary process, driven by practicality and efficiency. Tocal has not been an early adopter of online and ePortfolio technology but has invested in new technology and systems only when they are mature, reliable, and stable. Adoption of online systems has also been delayed because of poor broadband access for many of the regional and remote locations the College's clients. We are reminded of this limitation even at the Paterson campus, which has very poor mobile phone reception. New systems of work and technology have been adopted only when they offer a clear advantage for both the college and the candidate.

Tocal College now has in place significant online services, which are available from the college web site and the associated Moodle site. However, broadband access has been and will continue to be a limiting factor for delivery of online services to rural Australia. While the National Broadband Network will benefit many rural towns and communities, residents on outlying farms will still be dependent on wireless using mobile phone networks or, where there is no mobile coverage, satellite technology. This has significantly slower speed and is both less reliable and more expensive than the services enjoyed by the majority of Australians who live in urban areas.

Tocal College will continue to innovate in this evolutionary manner. The college services a generally conservative sector and is concerned first and foremost with practicality.

References

Archer, A. C. (2011, July). *Tocal College and the Saleyards Industry working together*. Paper presented at the Annual Conference of the Australian Livestock Markets Association, Moss Vale, Australia.

Australian Bureau of Statistics. (2002). *Education and training indicators Australia, 2002* (Report No. 4230.0). Retrieved from the Australian Bureau of Statistics website: http://www.abs.gov.au/ausstats/abs@.nsf/mf/4230.0

Australian Qualifications Framework Council. (2011). *Australian qualifications framework* (1st ed.) Retrieved from http://www.aqf.edu.au/Portals/0/Documents/Handbook/AustQuals%20FrmwrkFirstEditionJuly2011_FINAL.pdf

Australian Qualifications Framework Council. (2007). *Australian qualifications framework: Implementation handbook* (4th ed.). Carlton South, Australia: AQF Advisory Board. Retrieved from http://www.aqf.edu.au/portals/0/documents/handbook/aqf_handbook_07.pdf

Bell, C. (2009). *Skills recognition for the rural sector.* Paper presented at the Skills Recognition 2009 Conference, Redfern, Australia.

Bell, C., & Bayley, D. (2011). You are invited to the marriage of extension and vocational training. *Extension farming Systems Journal,* 7(2), 41-48.

Bell, C., & Ryall, K. (1997). *Best practice in vocational agricultural education*. Paterson, Australia: C. B. Alexander Agricultural College.

Bologna Process and Strategic Challenges. (2009). *JISC infoNET*. Retrieved from http://tools.jiscinfonet.ac.uk/downloads/bologna/Bologna.pdf

Boud, D., & Felletti, G. (1991). *The challenge of problem based learning*. London, UK: Kogan Page.

Boud, D., & Garrick, J. (1999). *Understanding learning at work*. London, UK: Routledge.

Butler, P. (2006). *A review of the literature on portfolios and electronic portfolios*. Retrieved from http://akoaotearoa.ac.nz/download/ng/file/group-996/n2620-ePortfolio-research-report.pdf

Dodwell, E. (2009). Conversation or inquisition? Interviewing as a method of RPL assessment in the VET Sector. In D. Berthelsen & L. Vogel (Eds.), *Transforming Queensland VET: Challenges and opportunities* (Vol. 3, pp. 29-41). Brisbane, Australia: QUT Publications. Retrieved from http://eprints.qut.edu.au/30365/1/c30365.pdf#page=37

Drinan, J., Archer, A. C., Brouwer, D., Moller, W., & Walsh. B. (1985). Introduction of problem-based learning in a agricultural college curriculum. In D. Boud (Ed.), *Problem based learning in education for the professions* (pp. 207-212). Kensington, Australia: HERDSA.

Freire, P. (1996). *Pedagogy of the oppressed*. London, UK: Penguin.

Guthrie, H. (2009). *Competence and competency-based training: What the literature says* (Report No. 2153). Adelaide, Australia: NCVER.

Hickman, M., & Dugdale, H. (2007). *Aligning national competencies with the cotton industry's best management guidelines for strategic planning: Final report* (CRDC Project No. FARMBIS). Toowoomba, Australia: Cotton Research and Development Corporation.

Hickman, M. (2011). *Best management practices: Certified BMP farm manager. Recognizing your skills through BMP*. Toowoomba, Australia: Department of Primary Industries and Fisheries.

Irrigation Australia. (2010). *How to become a certified irrigation manager.* Retrieved from http://www.irrigation.org.au/assets/pages/68BB9941-1708-51EB-A6D60BA1C2EECF4B/cim%20factsheet10.pdf

Knowles, M. S. (1973/1990). *The adult learner: A neglected species.* Houston, TX: Gulf Publishing.

National Centre for Vocational Education Research. (2009). *Recognizing non-formal and informal learning: Participant insights and perspectives.* Retrieved from http://www.ncver.edu.au/publications/2084.html

National Centre for Vocational Education Research. (2011). *Historical time series of vocational education and training in Australia, from 1981.* Retrieved from http://www.ncver.edu.au/publications/2395.html

Smith, L., & Clayton, B. (2009). *Recognizing non-formal and informal learning: Participant insights and perspectives* (NCVER Report No. 2084). Retrieved from http://www.ncver.edu.au/publications/2084.html

Tocal College. (2011). *Skills recognition handbook: Working together to recognize your skills.* Retrieved from http://www.tocal.nsw.edu.au/__data/assets/pdf_file/0004/425884/Agriculture-SR-handbook.pdf

---

CHARLIE BELL is currently an Education Officer with Tocal College, which is part in NSW Department of Primary Industries. He has worked in agriculture for over 30 years having been a farmer, agricultural consultant, and owner of a specialist agricultural recruitment firm in addition to his career in education. Charlie has worked on a range of educational programs with Tocal College including lecturer delivering courses in cropping and farm management and extensive work in helping develop and implement the innovative recognition of prior learning program for adults. His currently works closely with industry leaders on workforce development projects for sectors including cotton, livestock marketing, and biosecurity. He has also worked in vocational education in England.

JULIE WHITE has worked in the education sector for 15 years. More recently, she has been involved in adult education in agriculture and natural resource management. Julie currently works in adult education with a focus on monitoring and evaluation and e-learning at Tocal College based in Paterson, New South Wales. For the past three years she has been overseeing the development and delivery of online courses for the College and the management of student and staff interaction with the online delivery platform.

Appendix
Example ASSESS Sheet

RTE5807A: Manage staff (Cotton BMP Manager)

This unit covers the selection, induction and management of staff members to ensure effective personal and professional behavior, includes termination of employment where necessary.

A **ANSWERS**	***Can you answer questions such as these?*** 1. What industrial awards apply to workers in your enterprise? 2. What employer and employee needs, responsibilities and rights are determined at the outset? 3. What steps would you take to recruit, select and induct a new staff member? 4. How do you ensure that staff are performing satisfactorily? 5. How would you deal with a staff member whose performance was unsatisfactory (for example, always late, repeatedly making mistakes, uncooperative)? 6. What is the procedure for terminating the employment of a staff member whose performance has been unsatisfactory? 7. What methods do you use to encourage communications with staff? 8. How are staff rewarded for their contributions to the efficiency of the business? 9. How do you determine the appropriate number of employee for your operation? 10. Why is it important to resolve disputes and conflicts quickly and according to accepted practice? 11. Why is it important to make all personnel aware of OHS risks and safe work practices and their obligations to organizational policy in carrying out their duties? ***Your assessor will use the above questions to initiate discussion during your assessment interview. Your responses will help confirm that you have the required breadth and depth of knowledge related to this unit.***
S **SHOW**	***Can you show or demonstrate this particular unit to the assessor? At the time of your workplace visit the assessor may want you to…*** • Demonstrate interaction with staff. This could be staff induction, training, performance reviews, termination or planning / information sessions. • Identify and describe tasks and the range of conditions under which performance will occur. • Discuss the importance of legislation, codes and national standards when preparing person specifications. • Overview the processes of designing, clarifying, establishing and implementing terms of engagement, induction programs, worker communication, performance management strategies and termination of employment processes. • Discuss strategies involved in identifying gaps in staff skills and knowledge and implementing on and off the job training to offset these. • Demonstrate processes for recording and administrative procedures. • Outline the importance of industrial relations, industrial awards and enterprise agreements. • Identify, assess and control OHS risks and hazards.

S **SAMPLES**	***Can you provide samples of your work in this unit? At the time of your workplace visit please provide samples for the assessor such as:*** • Staffing policy guidelines. • Recruitment advertisements. • Positions descriptions. • Induction checklists. • Training plans. • OHS policies and procedures. • Records of staff meetings • Employment contracts. • Performance reviews.
E **EXPERIENCE**	***What is your experience in this unit?*** Experience in managing staff is essential. Please prepare a dot point summary of relevant related activities in which you have been involved. The list must include details of any work or study related to managing staff.
S **SUPPORT**	***Can you get support from others to help verify your competency?*** It will be important for your assessor to discuss and confirm your experience related to this unit with an appropriate observer. Your assessor will specifically refer to the performance criteria stipulated in this unit of competency.
S **STUDIES**	***Have you done any formal or informal training in this unit?*** • If you have undertaken relevant studies, the subject outlines and copies of your results should be made available. (e.g., TAFE subjects, Ag College units) • Your personal profile should list key seminars, workshops, conferences and other informal study activities that have assisted you to acquire this competency. Relevant programs would include those related to managing staff.

International Journal of ePortfolio
http://www.theijep.com

2013, Volume 3, Number 1, 75-89
ISSN 2157-622X

The Blended Advising Model: Transforming Advising with ePortfolios

G. Alex Ambrose
University of Notre Dame

Laura Williamson Ambrose
Saint Mary's College

This paper provides the rationale and framework for the blended advising model, a coherent approach to fusing technology—particularly the ePortfolio—into advising. The proposed term, "blended advising," is based on blended learning theory and incorporates the deliberate use of the strengths from both face-to-face and online environments, as well as synchronous and asynchronous technologies and interactions. ePortfolios and an advising syllabus will be offered as core examples of practical applications of the theoretical blended advising model in redefining and reengineering the advising process. Current and emerging advisor support systems and delivery technologies are also organized and applied to the proposed model to illustrate the possibilities, potential, and processes that are created from a transformative blended advising redesign.

The increase in the adoption of Internet-related technologies that provide learning anytime, anyplace, and to anyone has led to rapid growth in courses being offered in the blended learning format, a format in which a portion of the face-to-face time is augmented with online activities designed to enhance and enrich face-to-face interactions (Chen, Lambert, & Guidry, 2010; Robinson & Hullinger, 2008; Vaughan, 2010). In considering these developments, Garrison and Vaughan (2008) claim that higher education has reached a point where three key areas have begun to intersect: interest (e.g., intuitive appeal), need (e.g., educational demands) and opportunity (e.g., potential of communications technology). The convergence of these trends offers new possibilities for engaging students, particularly in the areas of technology-enhanced education and advising. Nonetheless, the application of technology use in distance education and blended learning should not simply be about being more efficient in serving more students; instead, these practices should be about serving and engaging more students more effectively.

The purpose of this paper is to provide a discussion of the transformative potential of the blended advising model, in the contexts of both on-campus and online higher education settings, for full-time advisors and faculty advisors. A review of the current state of academic advising will both identify the optimal perspective of the advisor with regard to institutional goals and establish advising as a teaching practice—a learning process explicitly laid out in an advising syllabus and documented in an ePortfolio. Supported by blended learning theory, a new paradigm in advising is then presented and explored using the example of an ePortfolio as a way of demonstrating the importance of rethinking and reengineering the current processes that characterize student-advisor interaction. Following this, a review of the current and emerging technologies in advising will serve as a platform for extending the potential applications of the proposed blended advising model. Finally, future research and scenarios outline the possibilities for organizing current technologies into dynamic advising support and delivery systems.

Problem

Current Approach to Technology in Advising

Junco (2010) claims two imperatives for the use of technology in advising: first, with the reality of the current economic hardships, institutions are being forced to do more and to do better with less; second, as a profession and a practice, advising must meet the digitally savvy students "where they are." From an advising perspective, Leonard (2008) describes the ways in which technology-assisted advising can be more effective and efficient when using technology to anticipate and manage routine activities and situations, as well as to increase convenience through availability (anytime) and accessibility (anywhere). Additionally, Leonard (2008) claims that appropriate technology integration in advising implies the enhancement of the advisor-advisee relationship by raising the discourse and interaction of the advising to a level beyond the mundane (e.g., small talk and re-introductions), the administrative (e.g., forms and signatures), and the informational (e.g., checklists and handouts).

In the same vein, Junco (2010) addresses some of the problems inherent in standard advising paradigms, pointing out a clear difference between advising sessions in which students wait for the advisor to tell them what courses to take and those sessions in which students have done their homework, researching, for example, general education requirements, prerequisites, and possible programs. Pre-engaged students who arrive prepared for advising sessions are, unfortunately, not the norm.

McKamey (2007) points out that many students come to their advising appointments with no real understanding of why they are there and, as a result, have nothing prepared for the meeting. This lack of pre-engagement leads to other problems, namely the

potentially negative, demoralizing tone of interaction that transpires when advisors query students about issues they are unprepared to discuss. Yarbrough (2002), too, remarks that advising encounters which are restricted to probing questions designed to illuminate and clarify the shortcomings of the student can create a confrontational environment that both the student and the advisor seek to avoid. This dynamic may also contribute to tendency to favor "safer" transactions that avoid confrontation and discomfort but nonetheless fail to engage the student beyond a surface-level interaction. Such tendencies and practices are especially problematic early on, given the impact these brief exchanges can have on a student's sense of self-efficacy in his/her academic career.

Even in instances in which technology is more commonly deployed in advising (through e-mail, advising-notes databases, and websites) the problem of transactional, surface-level interactions remains. In other words, technology expedites information access, but it fails to transform advising practice: e-mail becomes a means of simply exchanging short bits of information; advising databases such as Microsoft Access do nothing more than replace individual paper versions of student files and advising notes with individual digital versions; and advising websites serve as digital brochures and one-way informational delivery systems, albeit in visually appealing, easily accessible formats. In meeting the needs of today's digital student, advisors could use technology to enhance rather than replace face-to-face interactions—to do more and do better with less. In short, opportunities for collaboration, interaction, and reflection through technology are being lost when efficiency alone is the goal. Such ineffective uses of technology perpetuate transactional, consumer-like interactions instead of fostering mentoring relationships that prioritize effectiveness and engagement.

Literature

Blended Learning

In recent years, the theory of blended learning has emerged as a useful pedagogical model for teaching with technology and meeting the needs of twenty-first-century students. It is the contention of this article that blended learning theory also lends itself to the advising of these students. Blended learning is both simple and complex. At its simplest, it combines asynchronous Internet technology with face-to-face learning (Garrison & Kanuka, 2004). Where the complexity emerges is in the thoughtful integration of the strengths from the online and on-campus components, as opposed to practices that simply "tack on" technology. Blended learning does not involve a mere layering or bolting on of one approach to the other. In other words, it is not enough to deliver old content in a new medium. Instead, blended learning requires the true re-examination of educational goals, structures, and processes. Garrison and Vaughan (2008) claim that blended learning is at the center of an evolutionary transformation of teaching and learning in higher education and is based on three key assumptions: restructuring and replacing traditional class contact hours, thoughtfully integrating face-to-face and online learning, and fundamentally rethinking course design to optimize student engagement. Done effectively, the blended design offers a significant departure from both ends of the teaching spectrum (i.e., face-to-face learning and fully online learning) and represents a fundamental re-conceptualization and reorganization of dynamic teaching and learning based on these new interactions.

The core issue at hand in integrating technology into the overall educational process is how to fuse effectively the most desirable and valued characteristics of both contexts in order to generate a kind of quantum shift in both the nature and the quality of the educational experience. Each environment, the online computer-meditated space and the face-to-face environment, has its own strengths and weaknesses. For example, flexibility is considered a strength of the asynchronous online computer-mediated environment and a weakness of the face-to-face environment. Online environments extend time and space so that students have the ability to contribute at the most convenient time for them. However, Mikulecky (1998) asserts that spontaneity is a strength of the face-to-face interaction and a weakness of the online environment, since students and instructors working together during the same time and space can generate rapid chains of associated ideas and serendipitous discoveries. Moreover, since the online medium is considered to be impersonal by many (Benbunan-Fich & Hiltz, 1999), it may cause a lower satisfaction level with the process (Haytko, 2001). Indeed, this human connection factor is considered one of the greatest benefits of the face-to-face environment because it provides social presence, opportunities for bonding, and ease in developing trust. The online asynchronous technology-mediated environment can also bring a set of characteristics unique to that environment: from the challenges students face with procrastination in the online atmosphere (Benbunan-Fich & Hiltz, 1999) to the potential for a greater depth of reflection, because students have more time to carefully consider and provide more detailed, thoughtful reflections than in a face-to-face environment with a set class time (Benbunan-Fich & Hiltz, 1999; Mikulecky, 1998).

It is important to represent blended learning on a continuum of degrees of learning that incorporate

technology. Graham (2005) categorizes blended learning into three levels or blends: enabling, enhancing, or transforming. Enabling blends focus on improving efficient, convenient, and digitized access. Enhancing blends allow for incremental change to pedagogy, whereas transforming blends bring a radical transformation to the teaching and learning process. As a result of this transformational shift, teaching moves away from the dissemination of information toward the creation of learning environments in which students co-construct knowledge through interactions with the instructor, peers, and course content.

What makes blended learning particularly effective is its ability to facilitate and deepen the sense of engagement while simultaneously facilitating the conditions for a community of inquiry to provide dialogue, debate, negotiation, and agreement (Garrison & Kanuka, 2004). Asynchronous Internet communication technology platforms can facilitate the written and reflective elements that prepare students for the dynamic, fast-paced, and spontaneous verbal communication that occurs in a face-to-face interaction. In other words, in a blended design the online and face-to-face components work together to mutually reinforce elements, skills, and content derived from both environments. Online writing and discussion board postings enhance classroom conversation; classroom group work sets up asynchronous collaboration online.

Blended learning provides an effective, low-risk innovation strategy for not only integrating and applying technological tools, but, most importantly, for envisioning this integration as one that transforms learning through blended design. These essential components of blended learning offer powerful applications for advising—a field, indeed, a discipline uniquely and strategically situated to provide significant impact on student engagement at the university or college level.

The Strategic Place and Opportunity of Academic Advising

Advisors, as educators, share the challenge of meeting the needs of digitally savvy students, not only in acknowledging but also in embracing fully the role technology promises to play in higher education, particularly as these students begin transferring and applying the knowledge, skills, and experiences from their academic lives to their professional lives.

As higher education continues to find itself increasingly subject to internal and external scrutiny, leaders in higher education must identify strategic ways to demonstrate student satisfaction, success, and learning. Quality advising can yield improved student retention rates and student relationships and to help clarify academic and career goals (Rinck, 2006). Graduation rates are important, but the ultimate measure of student success and progress is whether the students have learned what they need to be successful in their personal, professional, and civic lives (Campbell & Nutt, 2008). Academic advising has increasingly been acknowledged for its strategic place in providing an opportunity to support student engagement by connecting students with learning opportunities (Campbell & Nutt, 2008; Rinck, 2006; Schulenberg & Lindhorst, 2008). Advisors are among the first representatives of an institution that incoming students encounter and may be one of the few that remain consistent as they move through and exit the institution, offering personalized and sustained interaction. So, too, can advisors help students sequence, scaffold, and shape meaningful learning experiences both in and out of the classroom (Campbell & Nutt, 2008).

Looking forward, Campbell and Nutt (2008) claim that academic advising in the twenty-first century is being recognized nationally and internationally throughout colleges and institutions for the powerful strategic potential advisors can play in engaging and supporting student learning in the total institutional educational strategy. Academic advising can be seen as an engaging educational process that moves away from a paradigm of teaching as information input toward a paradigm of learning with an emphasis on outcomes. Academic advising can support key institutional conditions and directly impact and influence student engagement.

Advising is Teaching

Research and scholarship in advising are two key factors shaping the academy's recognition that advising is a distinct interdisciplinary scholarly field of applied research, one with a national association and a peer-reviewed journal publication (Campbell & Nutt, 2008; Schulenberg & Lindhorst, 2008). In 2006, the National Academic Advising Association (NACADA) developed a concept of academic advising that affirms the integral role advising plays in fulfilling the teaching and learning mission of higher education. This concept of advising is based on three factors: advisors have a curriculum (what advising deals with), pedagogy (how advising does what it does), and student learning outcomes (the result of academic advising; NACADA, 2006). Central to this perspective is the guiding principle that "advising is teaching." This notion originated from Crookston's (1972) developmental advising method, which contrasted developmental approaches with prescriptive ones found in medical analogies that characterized advisees as patients. Similarly and more recently, Appleby (2008) extends

this theme of advising as a practice of teaching and learning by suggesting that advisors gradually give more responsibility to the students by helping them develop problem-solving and decision-making skills, challenging them to develop higher-order processes, and facilitating deeper insights into their goals. If advising is a teaching process—one with a curriculum, a pedagogy, and student learning outcomes—then it follows that advisors and advisees should be guided by an advising syllabus. The advising syllabus offers an opportunity to clarify the role of advising in a student's education (e.g., its procedures, relationships, expectations, and benefits) and can help prepare students to make the most of their face-to-face sessions (McKamey, 2007; Trabant, 2006). Furthermore, Appleby (2008) asserts that the advising syllabus is a step toward improving the perception of academic advising as a legitimate educational process that can support the trickle-down mission and vision of the larger institution.

The Advising ePortfolio

If the advising syllabus serves as a teaching tool that identifies learning outcomes that can be achieved throughout the advising process, then the ePortfolio could play a crucial role in both facilitating and documenting student progress with regard to key advising outcomes such as major selection, intellectual development, and academic and career goal-setting (Ward, 2008). The ePortfolio enables students to collect, organize, and present multimedia evidence (e.g., papers, projects, pictures, reflections) of learning experiences including class, work, research, time abroad, and/or service. ePortfolios and advising share similar developmental processes such as reflection and transferability of knowledge and skills from classroom to career. For example, collections of student artifacts, evidence, and reflections from the ePortfolio can also be shared with an advisor, thereby creating both a foundation and a medium for advising sessions to improve engagement and intellectual and personal development.

Two recent advising and portfolio studies have been conducted. In 2010, the Stanford Vice Provost for Undergraduate Education, Undergraduate Advising, and Research and the Registrar's Office launched a pilot using ePortfolios (Chen & Black, 2010). The pilot had two goals: (a) to explore how the ePortfolio medium could assist in the advising of pre-major first- and second-year students, and (b) to explore how ePortfolios and a culture of folio thinking can enhance face-to-face interactions between students and their advisors. The promise of this effort is that the program seeks to capture and document students' learning and engagement through reflection, rationale building, and planning. In addition, emphasis is placed on a shared responsibility and ownership of a student's "learning career"—inside and outside the classroom, on campus and off campus, in face-to-face and virtual environments, and during and after the student's time in college. A second advising and portfolio study was conducted at an undergraduate engineering program at Taylor University in Malaysia, which developed and tested an "integrated portfolio and advising system" called the Educational Advisory System (EASY) (Al-Atabi, Mahdi, Younis, & Chung, 2011, p. 533). Although this study used paper-based portfolios instead of ePortfolios, it provides a definition for an integrated portfolio-and-advising system, one that requires students to track the progress of their learning outcomes, to provide documentation, and to meet regularly with their academic advisors for feedback. The EASY also aimed to make students intentional and active learners by having them take ownership of their academic progress.

Taken together, the following points provide the logic and framework for reimagining and improving both the advising process and the field, particularly as they relate to technology: advising is strategically and uniquely positioned at the student, class, program, and institutional levels; advising is a teaching process that can utilize an advising syllabus as a tool to identify learning outcomes; the ePortfolio can serve as a medium for documenting evidence of growth and achievement of these learning goals, as well as encouraging thoughtful reflection and active, integrative learning. While the ePortfolio serves as one of many potential technological platforms and tools that could extend blended learning theory to the advising process, we focus on ePortfolios here because they serve as a particularly powerful and adaptive platform for applying blended learning to advising. In what follows, ePortfolios function as an integral part of two distinct applications for blended advising: as a component of a one-credit course (complete with syllabus) with a full-time academic advisor; and for upper-level students, as a capstone experience with a faculty advisor in a major area. Collectively, these scenarios and applications demonstrate how this blended approach could transform the advising field from a variety of perspectives, including full-time advisors and faculty advisors (to either first-year students or students in their specific fields).

Discussion

A New Approach and Applications: The Blended Advising Model

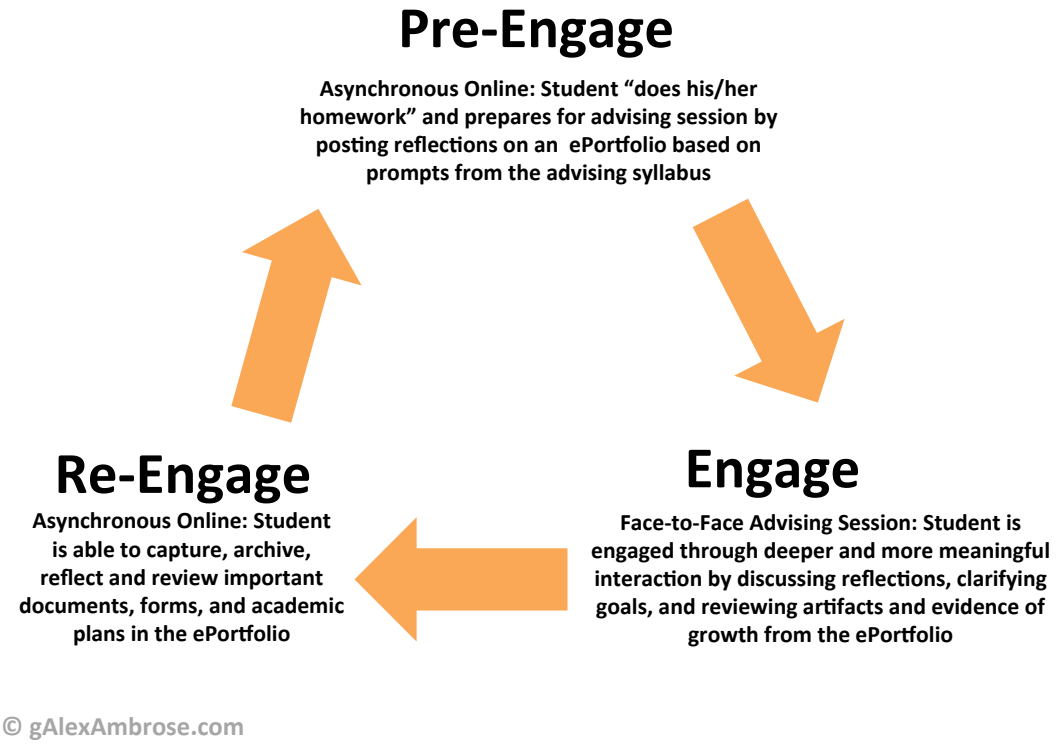
A new framework, model, and theory are needed in order to give purpose and direction to the

transformational potential offered by the infusion of technology into the advising process. Because advising is an evolving discipline, one that is positioned at a pivotal location in the educational landscape, it is also ideally situated to both accommodate and adapt blended learning theory, extending this theory beyond the domain of "classroom" pedagogy. Nonetheless, as an emerging scholarly field, advising faces the risk of adopting catchy, fleeting lingo such as *virtual advising, e-advising*, and *hybrid advising*, labels that carry no model or underlying theory. These terms perpetuate problems inherent in using technology for technology's sake—the absence of a clear purpose or goal. The proposed term *blended advising* is based on an established theory of learning and deliberately incorporates the strengths of both the face-to-face and online environments through synchronous and asynchronous technologies and interactions.

All methods of advising involve two elements: space and time. Students and advisors interact either synchronously (same time) or asynchronously (different time). Similarly, students might engage with their advisors on campus (same place) or online (different place). Blended advising draws directly from the benefits of synchronous, on campus advising—"same time, same place" experiences that enable human connection and spontaneity—while simultaneously taking advantage of the asynchronicity and computer-mediated environment of online advising—or "different time, different place" experiences that afford more opportunities for flexibility and accessibility, thereby leaving out any weaknesses from either method.

The purpose of infusing technology into the blended advising process is not simply to replace the face-to-face practice but rather, to enhance and extend the quality of engagement. By using technology to enhance and extend the space and quality of engagement before, during, and after the advising session, this new paradigm of "pre-engage/engage/re-engage" aligns the advising process better with the developmental process of teaching and learning. Instead of transactional and surface-level interactions dealing with pins and paperwork, advisors and advisees have a space and a place for quality engagement to uncover, discuss, and develop both passions and purpose. Figure 1 shows a new dynamic cycle of interaction based on the transformational power of blended learning design.

Figure 1
New Approach to Advising



The cycle of engagement enabled by the blended advising model and ePortfolios, in particular, can be applied to both full-time advising and faculty advising scenarios. In the former, a 1-credit first-year advising seminar utilizes this blended design, guiding students throughout their first semester meeting both as a group (face-to-face and online) and through one-on-one sessions with the advisor (face-to-face or online via video conference). The seminar makes use of an advising syllabus (see Appendix A) and the ePortfolio platform to structure and document the learning outcomes and development. As an alternative to this course-based approach, advisors could simply scale down the scope of the syllabus and connect required ePortfolio postings to a registration pin process. In this application, students "do their homework" by completing a pre-appointment assignment based on a prompt listed on the advising syllabus, which asks that they research majors of interest or reflect on goals. Responses to these prompts are posted in their ePortfolios as preparation for a face-to-face advising session. The student and the advisor now have a shared space to discuss reflections, clarify goals, and review artifacts and evidence of growth. After the advising session, students could capture, scan, and maintain a record of important documents or forms, as well as develop an academic plan that could be used later to measure and document progress towards academic, personal, and professional goals.

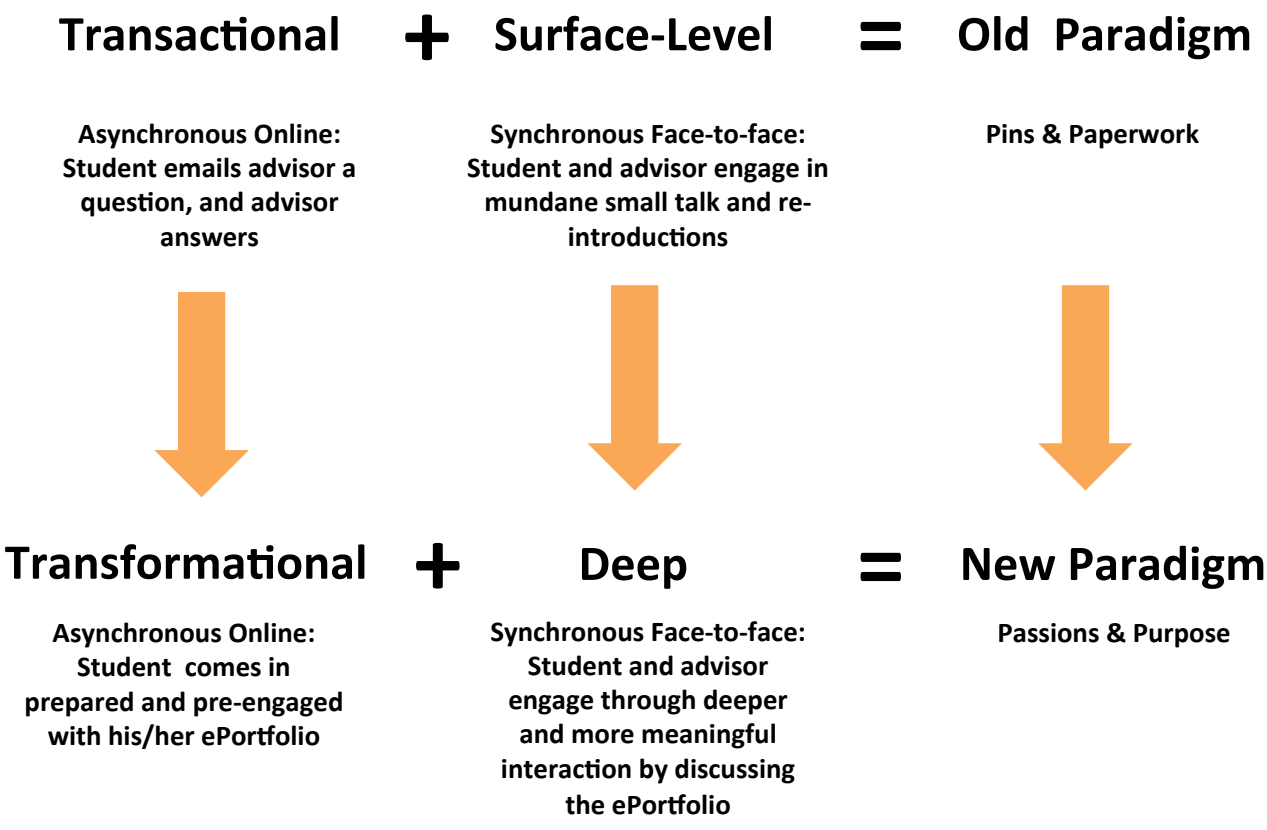
Faculty and departmental advisors, too, can benefit from the cycle of engagement generated by the ePortfolio, whether as an extension of work begun in the first year or as an entirely new assignment offered in a student's junior or senior year. This assignment might be offered as a part of an upper-level course in the major or as an external requirement in the department or program and tied to a senior seminar, capstone experience, or exam (see Appendix B). At this stage in a student's learning and development, the ePortfolio could facilitate a student's transition to life beyond the undergraduate institution. Prior to an office hours visit, students might be required, for example, to pre-engage: to post a resume, compile a showcase of important projects and papers, upload a senior comprehensive exam, report on internship hours and experiences, reflect on the role of their educational experiences (e.g., in a liberal arts program), draft a personal statement, and post research on graduate school programs. Using these ePortfolio artifacts as a guide, office hour sessions would advance to more detailed engagements with specific projects and to more complex conversations about the scope of a student's learning after four years, rather than remain focused on editing resumes and discussing graduate school options. After the meeting, the student could re-engage by returning to the space of the ePortfolio, revising, updating and sharing content with his/her advisor online. Undoubtedly, the experience of designing ePortfolios also provides students with crucial skill sets, both in terms of refining their techniques of self-representation and in developing marketable digital media skills. The website addresses of these showcase ePortfolios could be listed on business cards, e-mail signatures, or at the top of graduate school applications. Individual departments, too, might turn to ePortfolios as a repository for outcome-based assessment data, in which students post particular reflections or artifacts in relation to department- or institution-level requirements.

As teaching faculty, departmental advisors are also uniquely situated to foster the linkages between the classroom and advising sessions, to reinforce the notion that advising is teaching. The ePortfolio serves a crucial role in this regard, as it provides both students and faculty with a learning community that extends beyond the physical classroom. Thoughtful reflections on course readings in journal posts might be only a click away from a related presentation from another course or a wiki study guide collaboratively authored by a group of students. Critical thinking skills developed in the scope of writing a reflection statement for the ePortfolio are linked, both literally and conceptually, to other areas of a student's life—academic, professional, and personal. As both process and product, ePortfolios exemplify the "place" of the upper-level student: simultaneously poised to look back on his/her work, synthesizing learning and carefully selecting artifacts to produce a snapshot of these educational experiences, and primed to move forward, continuing the dynamic process of self-reflection and life-long learning.

In short, blended advising with ePortfolios has the power to enhance student engagement at deeper and more dynamic levels by both pre-engaging and preparing the students before advising sessions and extending engagement during and after the sessions through reflection and review. One could ask, however, why would students prepare online if they do not already prepare for their face-to-face advising sessions? The real question underlying this inquiry, however, is whether students simply do not care to prepare or, rather, that they do not know how to prepare in productive and timely ways. By accommodating the technological needs of the twenty-first-century students in this way, advisors will reach more students in more varied ways. With the new blended advising paradigm and syllabus-directed approach, greater proportions of students can be channeled into active preparation for, participation in, and engagement with the total advising process. In other words, those who lack the developmental readiness of their more intellectually and academically mature peers will, in this more responsive digital model, move from transactional to

transformational involvement in the advising process. In addition, pre-engagement (asynchronous online), pre-advising prompts in an ePortfolio could be tied to required and graded assignments, through either an advising syllabus or an assignment in an upper-level course. Or from an administrative "carrot-and-stick" perspective, the blended advising engagement cycle could be built into the paperwork process required to obtain pins for registration. In short, the syllabus offers students a road map: expectations and intentionality are clearly foregrounded and laid out. Similarly, just as a discussion board thread requires *all* students to participate (vs. selective hand-raising in a face-to-face class), the online environment of blended advising demands active, full participation and preparation on the part of each student. The student is now asked to reflect beyond the space of the academic advisor's office walls or the professor's classroom, posting comments, reflection statements, and artifacts in an ePortfolio. Mediated by a clear syllabus as part of a one-credit first-year seminar course and through a combination of online and face-to-face interactions—all of which utilize the ePortfolio as the basis of conversation and reflection—this advising model turns the tables on students, "flipping" the advising process in a manner much like flipping the classroom. Advisors no longer carry the burden of capturing and documenting the meeting in their notes; instead, the students are responsible for their own learning career, freeing the advisors to comment and provide detailed feedback. Advising originates with the students: they provide the groundwork for all subsequent conversation and interaction, both face-to-face and online. As exhibited in Figure 2, in the blended advising model, learning and advising become active and self-directed processes rather than passive and transactional ones, inviting new patterns of exchange and offering new opportunities for interaction and engagement.

Figure 2
New Paradigm for Blended Advising



Future Tools, Scenarios, and Research

As the core technological platform, the ePortfolio offers a dynamic method for transforming advising, both face-to-face and online. Nonetheless, many other current and emerging technologies must also be considered in the total blended advising approach. Ample lists of advising support and delivery technologies exist (Leonard, 2008), but a comprehensive system of organization and an assessment of these applications has been lacking. To fill this void, Appendix C presents advisor support systems, while Appendix D indexes current and emerging advisor delivery tools, organized under sub-categories of synchronous (same time) or asynchronous (anytime). Considering ePortfolios in the context of a broader range of current and emerging technologies—from advisor tracking systems to learning management systems—allows for a more holistic picture of blended advising. In other words, as has been argued above, ePortfolios function as the central component in a comprehensive transformation of advising, which focuses on the cycle of engagement and the importance of student ownership of the advising and learning processes. However, the ePortfolio does not exist in isolation and will likely have the most significant impact and provide the greatest variety of both qualitative and quantitative data when incorporated into a broader suite of complementary tools and technologies that collectively can support this shift in paradigms as well as provide a more diverse set of learning analytics.

With such a robust and diverse variety of advisor support systems and delivery technologies at play, though, several questions emerge: What is on the horizon? What more can be done? Or, in what ways have approaches to using these technologies essentially failed to capitalize on the unique and influential position of the advisor? What technical, social, educational, and practical impact does the blended advising model have in higher education? In an effort to begin to address these questions, this final section draws upon the suite of technologies listed in Appendices C and D and considers a sample future scenario and potential research agenda. Although such technological integration is not a new phenomenon in advising, most approaches have only emphasized efficiency. The following full-spectrum, blended advising scenario will illustrate the range of possibilities and potentials for effective engagement when a suite of advisor support systems and delivery technologies are thoughtfully integrated into an advising pedagogy, an advising syllabus, and a set of practices.

The academic advisor logs in to the advisor tracking system and runs a query to determine which students have not yet declared their majors. An email goes out to a student, notifying her of this deadline. In response to the email, the student logs into Moodle, the University's learning management system, and clicks on the link to her advising course. Here the student accesses the advisor's syllabus and content management system. The student finds the required assignment for "declaring your major" (graded for the course or tied to an administrative registration pin for scheduling), completes the "exploring majors" tutorial with exercises and prompts, and then writes a reflection about her strengths, passions, and majors of interest, posting it on her ePortfolio. This student then clicks on the "book an appointment" link listed in the email signature or on the course website, views her advisor's availability, and books an appointment online for the next week to meet with the advisor. On the day of the appointment, the student automatically gets a text and an email reminder of her appointment. The student arrives on time and swipes her student ID card at the front desk. This adds a tally to the advisor administration tracking count and also sends an instant message to the advisor indicating that the student has arrived and is sitting in the waiting area. The student receives a text, e-mail, or app on her smart phone to fill out an online pre-meeting screening and a form with a few survey questions.

Meanwhile, the advisor reviews the admissions files scanned into the OnBase document management system, pulls up the student's case notes in the advisor tracking system, checks the student's transcript on Banner for grades from the previous semester, checks the assessment management systems for the student's most recent test grades, and reviews the student's latest reflection on her ePortfolio. The advisor then greets the student in the waiting area, and they begin their individual face-to-face advising session. After reviewing and discussing the student's low Chemistry scores, a projection on the grade point average (GPA) calculator shows that the student is in danger of academic probation. After discussing the student's ePortfolio reflection, the advisor notices passions, interests, and strengths in the humanities. Together, the advisor and student conduct a degree audit using the graduation progress system to develop a checklist, timeline, and academic plan for new majors. These planning documents are e-mailed to the student as Microsoft Excel files and stored in the ePortfolio for future review and revision. The student leaves the advising session engaged, with a new sense of purpose in her education.

Later that month, the student reads the advisor's wiki of frequently asked questions (FAQ) and watches screencasts on how to register for classes and build her own schedule. The student then uses the online Schedulizer to find all combinations for course

selection. Because the advisor has found an efficient and effective suite of advisor support systems and delivery technologies to build his blended advising approach, he is now able to increase his case load. In addition to automating the drudgery of informational transactions and administrative tasks, forms, and checklists, the advisor now has more time and creative energy to put towards researching more effective advising strategies, models, best-practices, qualitative ePortfolio data (e.g., word clouds of student interests, evidence of University/College outcomes), and learning analytics.

Based on the scenario detailed above, the table of current and emerging advisor support systems and delivery technologies, and the proposed blended advising model, future research questions and an agenda might include the following:

- What impact and benefits does a blended advising model with ePortfolios provide?
- How might data be generated to determine the extent to which a blended advising model using ePortfolios improves student success, student satisfaction, student engagement, and student retention and probation rates?
- How can advising ePortfolios support the trickle-down assessment of an institutional strategy and goals?
- How can faculty advisors implement the use of ePortfolios and blended advising into their courses and assess program outcomes?

Conclusion

In combining the strengths of the face-to-face and online advising environments, blended advising produces a dynamic cycle of engagement between advisors and students in which transactional, surface-level interactions ("pins and paperwork") give way to more meaningful, transformational and deep exchanges ("passions and purpose"). As a way of presenting the groundwork for this blended model, advising was first established as a teaching and learning process that can be articulated in an advising syllabus, allowing technology to be instructionally-designed into the advising process. The proposed term *blended advising* represents the deliberate use of the strengths of both face-to-face and online environments with synchronous and asynchronous technologies and interactions. ePortfolios were offered as a core example of what the theoretical blended advising model would look like in redefining and reconceptualizing the advising process for both full-time and faculty advisors and at various stages of a student's educational development. Advisor support systems and delivery technologies were then indexed and organized to inventory and evaluate a larger range of the available suite of tools that could be used in reengineering advising through a blended approach. In addition, a future scenario was envisioned to illustrate the new possibilities that emerge from a transformative blended advising redesign. Lastly, a future research agenda was offered to guide discussion, implementation, and research toward the scholarly formation of advising as a discipline. As advising is being redefined in the academy and as technology continues to play an increasingly larger role in higher education, there is a key opportunity for transformational technology infusion to be an essential factor of this redesign.

References

Al-Atabi, M., Mahdi, A., Younis, O., & Chung, E. (2011). An integrated portfolio and advising system for undergraduate engineering students. *Journal of Engineering Science and Technology*, *6*(5), 532-541.

Appleby, D. (2008). Advising as teaching and learning. In V. N. Gordon, W. R. Habley, & T. J. Grites (Eds.), *Academic advising: A comprehensive handbook* (2nd ed., pp. 85-102). San Francisco, CA: Jossey-Bass.

Benbunan-Fich, R., & Hiltz, S. R. (1999). Educational applications of CMCS: Solving case studies through asynchronous learning networks. *Journal of Computer-Mediated Communication*, *4*(3). doi:10.1111/j.1083-6101.1999.tb00098.x

Campbell, S. M., & Nutt, C. L. (2008). Academic advising in the new global century: Supporting student engagement and learning outcomes achievement. *Peer Review*, *10*(1), 4-7.

Chen, H. L., & Black, T. C. (2010). Using e-portfolios to support an undergraduate learning career: An experiment with academic advising. *EDUCAUSE Quarterly Magazine*, *33*(4). Retrieved from http://www.educause.edu/ero/article/using-e-portfolios-support-undergraduate-learning-career-experiment-academic-advising

Chen, P. S., Lambert, A. D., & Guidry, K. R. (2010). Engaging online learners: The impact of web-based learning technology on college student engagement. *Computers & Education*, *54*(4), 1222–1232. doi:10.1016/j.compedu.2009.11.008

Crookston, B. B. (1972). A developmental view of academic advising as teaching. *Journal of College Student Personnel, 13*(1), 12-17.

Garrison, D. R., & Vaughan, N. D. (2008). Community of inquiry and blended learning. In *Blended learning in higher education: Framework, principles, and guidelines* (pp. 13-48). San Francisco, CA: Jossey-Bass. doi:10.1002/9781118269558.ch2

Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The Internet and Higher Education*, *7*(2), 95-105. doi:10.1016/j.iheduc.2004.02.001

Graham, C. R. (2005). Blended learning systems: Definition, current trends, and future directions. In C. Bonk & C. Graham (Eds.), *The handbook of blended learning: Global perspectives, local designs* (pp. 3-21). San Francisco, CA: Pfeiffer.

Haytko, D. L. (2001). Traditional versus hybrid course delivery systems: A case study of undergraduate marketing planning courses. *Marketing Education Review*, *11*(3), 27-39.

Mikulecky, L. (1998). Diversity, discussion, and participation: Comparing web-based and campus-based adolescent literature classes. *Journal of Adolescent and Adult Literacy*, *42*(2), 84-97.

Junco, R. (2010, September). Using emerging technologies to engage students and enhance their success. *Academic Advising Today*, *33*(3). Retrieved from http://www.nacada.ksu.edu/Resources/Academic-Advising-Today/View-Articles/September-2010-Vol-333-Complete-Edition.aspx

Leonard, M. (2008). Advising delivery: Using technology. In V. N. Gordon, W. R. Habley, & T. J. Grites (Eds.), *Academic advising: A comprehensive handbook* (2nd ed., pp. 292-306). San Francisco, CA: Jossey-Bass.

McKamey, J. (2007). An advising syllabus: A tool to increase advising effectiveness. *The Mentor: An Academic Advising Journal*, *8*(1). Retrieved from http://dus.psu.edu/mentor/070321jm.htm

National Academic Advising Association. (2006). *NACADA concept of academic advising*. Retrieved from http://www.nacada.ksu.edu/Clearinghouse/AdvisingIssues/Concept-Advising.htm

Osika, E. R., & Redman, A. (2007). *Online advising: Stretching blackboard to meet students' needs*. Paper presented at 23rd Annual Conference on Distance Teaching and Learning, Madison, WI. Retrieved from http://www.uwex.edu/disted/conference/Resource_library/proceedings/07_5165.pdf

Rinck, C. (2006). Student engagement and academic advising. *The Mentor: An Academic Advising Journal*, *8*(1). Retrieved from http://dus.psu.edu/mentor/060628cr.htm

Robinson, C. C., & Hullinger, H. (2008). New benchmarks in higher education: Student engagement in online learning. *Journal of Education for Business*, *84*(2), 101-109. doi:10.3200/JOEB.84.2.101-109

Schulenberg, J., & Lindhorst, M. (2008). Advising is advising: Toward defining the practice and scholarship of academic advising. *The Journal of National Academic Advising Association*, *28*(1), 43-53.

Trabant, T. D. (2006). *Advising syllabus 101*. Retrieved from http://www.nacada.ksu.edu/Clearinghouse/AdvisingIssues/syllabus101.htm

Vaughan, N. D. (2010). A blended community of inquiry approach: Linking student engagement and course redesign. *Internet and Higher Education*, *13*(1), 60-65. doi:10.1016/j.iheduc.2009.10.007

Ward, K. (2008). From first year to career: Connecting advising syllabi to electronic portfolios. *Academic Advising Today*, *31*(2). Retrieved from http://www.mam.msstate.edu/documents/wardadvising.pdf

Yarbrough, D. (2002). The engagement model for effective academic advising with undergraduate college students and student organizations. *Journal of Humanistic Counseling, Education and Development*, *41* (1), 61-68.

G. ALEX AMBROSE, the Interim Coordinator of the Notre Dame ePortfolio Engagement Project (nDEEP), currently serves as an academic advisor and co-director of the Balfour Hesburgh Scholars Program in The First Year of Studies at the University of Notre Dame. He is a doctoral student in the Computing Technology in Education program at Nova Southeastern's Graduate School of Computer and Information Sciences. Alex's dissertation research examines the impact of advising ePortfolios on student engagement with first generation students. Alex is a Google Certified Teacher, Google Apps in Education Certified Trainer, and founder of Googlios.com. He is an active member of the Association for Authentic, Experiential and Evidence-Based Learning (AAEEBL) and the National Academic Advising Association (NACADA). Alex has over a decade of teaching experience, ranging from diverse suburban and inner-city Blue Ribbon elementary schools to higher education institutions in private, state, and community colleges—both face-to-face and online. For more information, see his faculty portfolio at www.gAlexAmbrose.com

LAURA WILLIAMSON AMBROSE is an assistant professor of humanistic studies at Saint Mary's College in Notre Dame, Indiana, where she teaches and writes on the literature and culture of the early modern period, both face-to-face and online. She also serves as a first-year faculty advisor to incoming students and a departmental advisor to Humanistic Studies majors. Her research interests include travel writing, Renaissance drama and prose, and the history of cartography. Inspired by the digital humanities, Laura incorporates project-based digital assessment and instruction into her Medieval, Renaissance/Reformation, and Restoration/Enlightenment literature seminars through the use of ePortfolios and collaborative online assignments. For more information, see her faculty portfolio at www.laurawilliamsonambrose.com.

Appendix A
Sample Advising ePortfolio Syllabus

First-Year Advising ePortfolio Independent Study
First Year of Studies, University of Notre Dame

Course Description:

In this one-credit First-Year ePortfolio Independent Self Study students will work with their advisors to design and develop their ePortfolios. The course will proceed as a hybrid course, utilizing both online and face-to-face instruction. The students' ePortfolios will be used as a way to reflect on the learning process, document skills, set goals, make academic plans, and explore areas of interest. Before the end of the semester, students will modify their learning portfolios to become showcase portfolios (i.e., online enhanced resumes) that can be used as the basis for conversations with departmental advisors as well as applications for internships, research grants, summer positions, graduate schools, and/or first jobs.

Course Goals:

1. Build an advising ePortfolio for personal development, career planning, and lifelong learning.
2. Apply portfolio process and thinking skills to log evidence of student learning, skills, and growth through artifacts, reflections, and a matrix.
3. Increase student engagement and develop a self-managed, lifelong, and life-wide learning attitude across informal and formal a-curricular, co-curricular, extra-curricular spaces.
4. Navigate through the First Year of Studies Advising Milestones and develop an awareness and plan for achieving University Outcomes.

Blended Redesign Rationale and Justification:

This class utilizes a blended format. The primary online self-paced asynchronous instructional environment will be at a pace, place, and time convenient for the learner. The learner and advisor will agree and sign a learning contract to determine a schedule of weekly or bi-weekly ePortfolio conferences that will take place throughout the semester. During the one-on-one or small group visit, the students and advisor will meet by appointment in the advisor's office. Students will use their ePortfolios to pre-engage and do their homework and begin some goal setting, reflecting, and academic planning before the advising session and ePortfolio conference. This will allow students to come in pre-engaged and prepared to make the face-to-face session more efficient, effective, and focused. The goals of this delivery environment are twofold: to have the students leave the advising session much more engaged and to allow advisors to follow up on goals, plans, and progress in the ePortfolio. Typically, a one-credit course meets for one hour over 14 weeks. The table below justifies and accounts for all the contact time substituted for traditional face-to-face class times and starting halfway through the semester. Here are the design goals and challenges that a blended redesign attempts to overcome:

- To reduce instructor-centered lecturing and increase inquiry and discourse.
- To decrease the time sitting passively in lectures and devote more time to active engagement in writing and reflection.
- To reduce synchronous class time and increase sustained, asynchronous communications to design more engaging and meaningful learning experiences.
- To increase communication challenges, online peer to peer collaboration/review, and opportunities to engage professor/advisor for individual help.
- To create a sustained community of inquiry that extends beyond the limited classroom opportunities and spans across informal and formal learning experiences and co/a/extra-curricular experiences.
- To gain cost and convenience efficiencies (e.g., print, distribution, instructors, classroom space).
- To promote more meaningful problem solving and authentic learning activities that relate to students' own academic development.

- To create a course structure using an ePortfolio system that enables students to make deeper connections between the course materials and more meaningful engagement with peers inside and outside of the classroom.

Component	Duration
Synchronous F2F Weekly Workshops (Classes)	3 x 2 hr. = 6 hrs.
Asynchronous Online Weekly Tutorials, Discussions, and Reflective Journals	6 x 1 hr. = 6 hrs.
Asynchronous F2F Individual Advisor ePortfolio Conferences	3 x 1 hr. = 3 hrs.

Appendix B
Sample ePortfolio Assignment for an Upper-Level Course

Assignment:

You will create your own ePortfolio website in which you organize, showcase, process, and share your work as a ____ major. The assignment will be broken down into three main parts: the site itself, weekly journal posts, and two reflections.

One of the most powerful aspects of ePortfolios is their dual function: they offer a way to *process* your learning and a space to *showcase* it. In other words, you have the opportunity to *explain* and to *show* what you do and how you do it. The very process of having to articulate and imagine one's purpose is itself a richly productive experience. Plus, they're fun to make. Dangerously, time-vortexingly fun.

Due:

Part 1: Building the ePortfolio – August 28
Part 2: Weekly Journal Posts – due on _____ (students vote on weekly due date)
Part 3: Hypertext Reflection – October 25
Part 4: ePortfolio Presentation – December 6

Goals:

1. To showcase, organize, and share your achievements, goals, and development as a ____ major and a ____ University/College student.
2. To practice thinking *through* writing and develop analytic thought, compile evidence, make connections, and track your own ideas regarding a particular topic or text in weekly journals.
3. To actively synthesize what you learn throughout the semester in this course and beyond.
4. To reflect on the tangible, "realistic" value of a ____ degree and, more broadly, a liberal arts education.
5. To apply crucial twenty-first century skills such as innovation, collaboration, web design, critical thinking, and communication to your study of _____.

Appendix C
Advisor Support Systems

System	Examples	Advising Applications
Content Management Systems (CMS)	Drupal, Google Sites	Individual advisors or departmental advising units can use to develop and manage websites that can make college catalogs, academic policies and rules, and advising handbooks more accessible
Advisor Tracking Systems (ATS)	Microsoft Access, Starfish, Gradefirst, AdvisorTrac, Simplicity	Advisors can use customer relationship management (CM) tools or customize databases to manage advisee caseloads, rosters, and advisor notes; advisors can also run queries and export spreadsheets to conduct data analysis and tracking
Learning Management Systems (LMS)	Blackboard, Sakai, Moodle	Advisors can use to organize and manage their student caseloads, calendars, grade book, announcements, and assignments and to administer their syllabus
Assessment Management Systems (AMS)	Starfish, Gradefirst	Advisors can use as an early warning system for student tracking of test grades and attendance
Document Management Systems (DMS)	OnBase	Enterprise-level document content management that eliminates wasteful redundant tasks and paper-based filings so that advisors can access, review, annotate, and add to a completely digital admissions file hosted in the cloud
Graduation Progress Systems (GPS)	Degree Audit and Review Systems, Degree Navigator, and Oracle/People Soft	Advisors can conduct degree audits on declared or "what if" scenarios that track academic progress towards degree completion by matching transcripts to degree-program requirements
Transfer Articulation Systems (TAS)	TAURUS	Advisors can manage advanced placement and transfer credit evaluators
Career Guidance Systems (CPS)	DISCOVER, SIGI PLUS, Myers-Briggs Type Indicator, Inventories	Advisors and students can use computer-based career exploration tools such as and self-assessment instruments

Appendix D
Advisor Delivery Technologies

Technology	Examples	Advising Applications
Synchronous Tools		
Smart Phones	Android, Blackberry, iPhone	Advisors can use phone calls, texting, and apps to communicate, remind and interact with students
Instant Messaging (IM)	AOL, Google Talk, Meebo	Advisors can use synchronous chat to hold online drop-in hours and assist with questions
Webinars	Adobe Connect, Elluminate	Advisors can hold web-based synchronous group advising sessions in which students can hear and view a live presentation
Asynchronous Tools		
E-mail & Listservs	Outlook, Gmail, Google Groups	Advisors can use for individual or large group asynchronous messaging
Calendaring	Google Calendar, Youcanbook.me	If advisors use web-based calendars, students can utilize online booking and appointment reminders
GPA Calculators	Web-based, Excel Templates	Probation students can use to track their current and projected grade point averages
Schedule Builder	Schedulizer	Students and advisors can use to find possible course schedule combinations
Online Survey & Forms	Google Docs Forms, Survey Money	Advisors can convert paper forms and surveys into online versions to expedite administering and improve data analysis and reporting
Social Networking Sites	Facebook, Ning	Advisors can build and manage an online community of learners
Blogs & Twitter	Blogger, Wordpress	Advisors can broadcast and archive timely announcements, information, and resources; students can also subscribe and comment
Wikis	Google Sites, Wikispaces, Wetpaint	Advisors can manage their own FAQs, links, and resources
Podcasts	iTunes University, YouTube.edu	Advisors can use audio or video recordings of presentations or talks that students can listen to or watch asynchronously
Screencasts & Slidecasts	Camstudio, Slideshare	Advisors can make recordings of their computer screen and PowerPoint presentations with audio narration to provide guided tutorials and tours on how to register online
ePortfolios	Google Sites, Maharra, Digication	Students can use as a personal learning system to organize goals, plans, and reflections; advisors can review to get better insight into the students