

Why Document Learning?

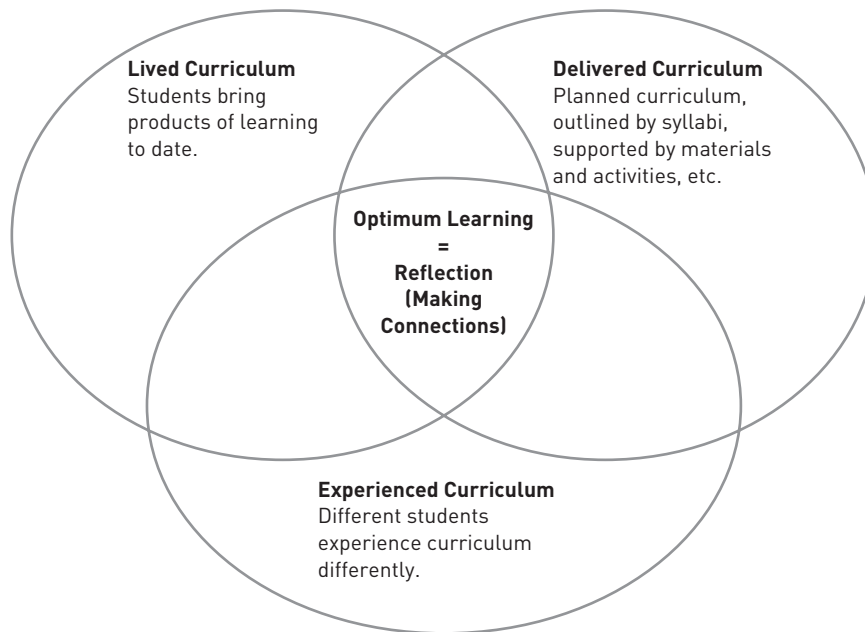
Learning today is a complicated business. New technologies are pushing the boundaries for learners as they seek to navigate a global world where information is quite literally at their fingertips. Yet, the way that learners *use* the information is often in question because they do not seem to be effectively analyzing the material that they find (Batson and Watson, 2011). More and more, instructors lament their students' lack of critical thinking abilities that will allow them to be successful learners and yet, increasingly, critical thinking is becoming a core competency for colleges and universities. Documenting learning is perhaps one of the most important ways for students to develop their critical thinking skills. Proponents of the ePortfolio movement have argued for well over a decade now that learners need to document what they know, reflect on their knowledge, and present that knowledge to specific audiences in order to learn deeply (Barrett, 2004, 2006; Cambridge, 2010). As many have pointed out, deep learning (Ramsden, 2003; Biggs, 1987; Biggs and Tang, 2007; Trigwell, Prosser, and Waterhouse, 1997; Kuh, et al., 2005), should be the goal of learners today and that learning should be lifelong. Ideally, students should internalize what they are learning because they are genuinely interested in the task, want to challenge themselves, and wish to increase their competence—that is, students should follow a mastery orientation to learning, rather than a performance goal orientation aimed at giving the teacher what they think he or she wants in order to get a good grade (Dweck, 1986; Ames and Archer, 1988). As Darren

Cambridge notes in his book, *Eportfolios for Lifelong Learning and Assessment*, “a major purpose of education is enabling individuals to have agency in the world through their evolving understanding of themselves, their capabilities, and their connections to others” (2010, ix). In other words, learners need to understand what they know and are able to do but, more important, *how* they know what they know in addition to what they do not know, as a way of strategizing where to learn next. Without this agency and ability to take control of their learning, students can “swirl” while in school and this can continue into their working life (Batson and Watson, 2011). Documenting learning in an ePortfolio, then, is a way for learners to explore and reflect on their knowledge by asking critical questions about where and how their knowledge was derived and what to learn next. As Cambridge puts it, “ePortfolios provide a lens for examining these questions and a means to put the answers into practice” (2010, ix). The process of reflecting on and questioning knowledge while thoughtfully articulating next steps is important for all types of learners whether they are individual student learners, faculty members, administrators, or even entire institutions.

The practice of documenting learning is not restricted to individuals; however, we focus in this book on student ePortfolios from the perspective of faculty instructors while also paying attention to the ways that student ePortfolios are valuable for different stakeholders, specifically, students themselves, faculty instructors, student affairs practitioners, and those interested in various types of assessment. Because ePortfolios enable learners to represent their own learning in a way that makes sense to them, they provide a window into the way that they have both *lived* and *experienced* different curricula—what Kathleen Yancey (1998) in Figure 1.1 refers to as the multiple curricula within higher education: the *delivered* curriculum, which is defined by the faculty and described in the syllabus; the *experienced* curriculum, which is represented by what is actually practiced by the student in the classroom; and the *lived* curriculum, which is based on the individual student’s cumulative learning to date.

This chapter explores the ways in which learning can be (and should be) documented and how ePortfolios can be used for this purpose. *Folio thinking*, the reflective practice of creating ePortfolios (Chen and Mazow, 2002; Chen, Cannon, Gabrio, and Leifer, 2005; Chen, 2009), is central to this documentation and we pay particular attention to the rationale behind this process-oriented practice as it is connected to learners’ abilities to develop the intellectual and social identities of

Figure 1.1 Yancey's Multiple Curricula of Higher Education



Source: Adapted from Yancey, 1998, 18.

responsible and engaged citizens who are capable of complex decision making in a democratic society. We conclude the chapter by considering how documenting learning can also provide coherence for the work that students, faculty, student affairs, and assessment offices perform and how this can also inform the ways that evidence of learning from different contexts is collected via ePortfolios to support learning in an increasingly technological and globalized world.

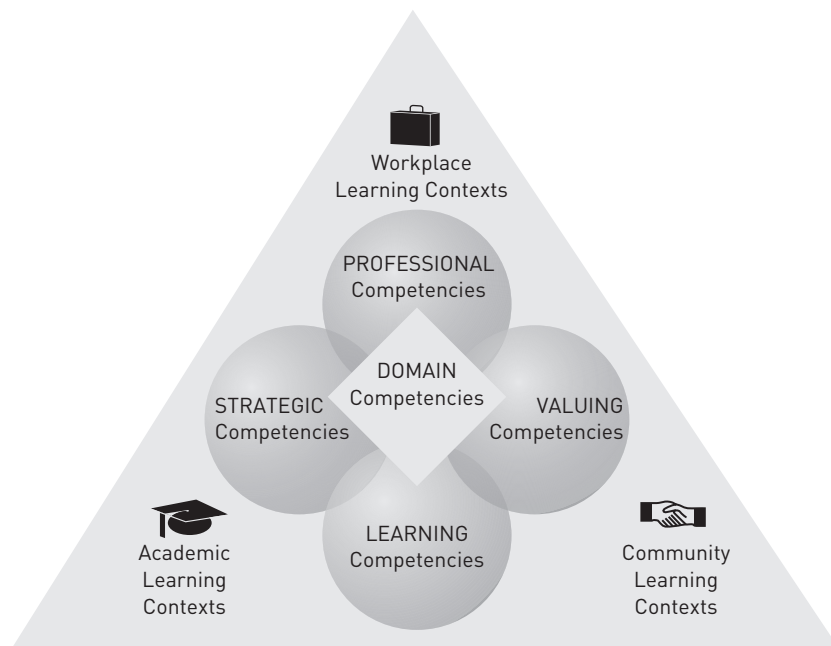
FOLIO THINKING AND REFLECTION: THE KEY TO DOCUMENTING LEARNING

ePortfolios offer a framework within which students can personalize their learning experiences, and create different representations of their learning experiences tailored to specific audiences while also developing multimedia capabilities (Chen and Penny Light, 2010). Though the ePortfolio tool itself serves as a central place

to capture the learning that happens in a variety of contexts (academic, workplace, and community) by collecting evidence from those contexts, making sense of that learning requires focused reflection on those experiences. Figure 1.2 illustrates the University of Waterloo's ePortfolio project, which emphasizes the need for integration of learning in different contexts. Students develop competency in the domain of their choice (i.e., their disciplinary major) while also reflecting on and integrating the learning that happens in academic, workplace, and community learning contexts).

Folio thinking is a reflective practice that situates and guides the effective use of learning portfolios. Drawing upon the literature in experiential learning, metacognition, reflective and critical thinking, mastery orientations to learning, and, of course, learning portfolios, folio thinking aims to encourage students to integrate

Figure 1.2 University of Waterloo Competency Portfolio Project



Source: Adapted from Chen and Penny Light, 2010

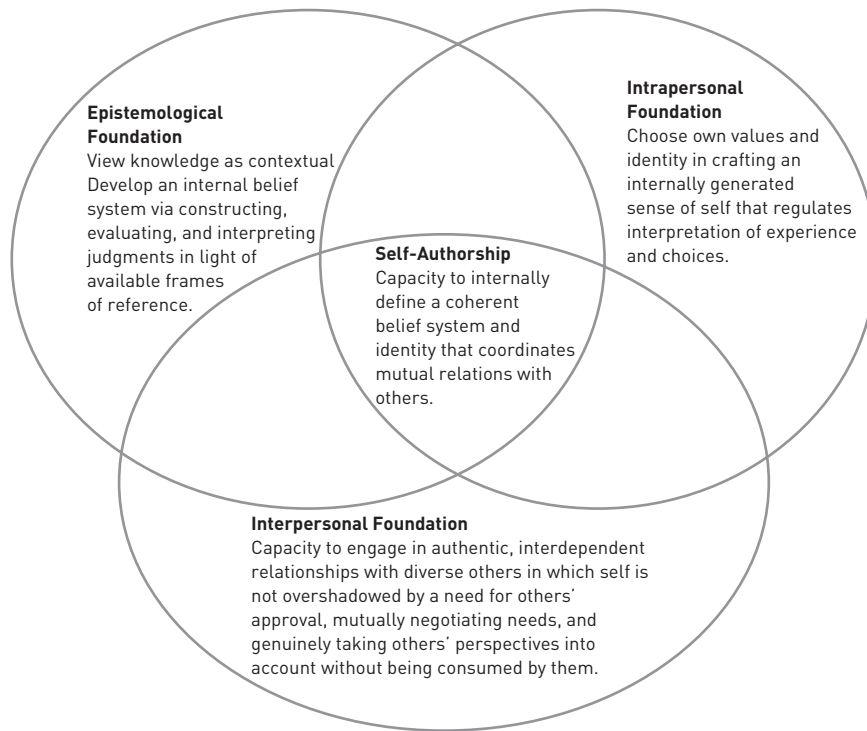
discrete learning experiences, enhance their self-understanding, promote taking responsibility for their own learning, and support them in developing an intellectual identity. (Chen and, 2002; Chen, Cannon, Gabrio, and Leifer, 2005; Chen, 2009).

Central to folio thinking and ePortfolios is the process of reflecting on the growth of one's knowledge and capabilities over time with an emphasis on metacognition (Brown, Peterson, Wilson, and Ptaszynski, 2008) by intentionally providing structured time and space for learners to consider and document the process of their learning and not just the product (assignments, tests, and so on). This process highlights the affordances of ePortfolios as not only potentially transformational with respect to individual learning and development but also the effectiveness of ePortfolios as assessment tools (Chen and Penny Light, 2010). Their use for both formative and summative assessment is seen in learners assessing their own knowledge. At the same time, others (instructors, employers, institutions) can use ePortfolios to assess the learners' skills and abilities for a variety of purposes, whether it is their ability to meet objectives in a course; to perform certain tasks, such as their suitability for a particular job; or to demonstrate institution-specific outcomes for accreditation. However, ePortfolios are much different from other assessment tools because they enable students to authentically represent their own learning in a way that makes sense to them and encourages them, ultimately, to take responsibility for their own learning.

Opportunities for Documenting Learning for Identity Development

The ability of learners to take responsibility for what they know through self-authorship is an important skill (Baxter Magolda, 2004; see Figure 1.3). In her work on learning partnerships and study of several national reports on higher education, Marcia Baxter Magolda asserts that a holistic approach to learning is required today in order to promote *intentional* learning, which allows for the integration of “cognitive, identity, and relationship dimensions of learning . . . [to illustrate] the complexity of undergraduate learning required to address the complexity of contemporary campus and adult life” (2004, 5). In essence, students need to be able to understand where their knowledge comes from and how they have come to know what they know, but also to apply that knowledge in a changing world. She suggests that “the systemic thinking, the ability to judge knowledge claims offered by authorities, constructing convictions, and

Figure 1.3 Baxter Magolda's Model of Developmental Foundations of Learning Outcomes



Source: Adapted from Baxter Magolda and King, 2004, 8

openness to new possibilities” are all part of what higher education is about. The ability of learners to be aware of their “own role in composing reality” (3) is important for their eventual role in the world. Ideally, learners should be able to engage with the world in a variety of ways as they develop an integrated sense of themselves through their interactions with the world. Of course, these abilities call into action a wide variety of skills ranging from critical thinking to more specific skills related to knowledge acquisition and construction. At the heart of the process, though, is reflection; Baxter-Magolda defines self-authorship as the “capacity to internally define a coherent belief system and identity that

coordinates mutual relations with others” (8). This capacity is best developed through reflective (guided and unguided) practices that engage learners in the process of asking questions about what they know and how they know it in terms of their “epistemological,” “intrapersonal,” and “interpersonal” foundations; her argument forms the basis for developing “cognitive maturity, integrated identity, mature relationships, and effective citizenship” (8).

These different foundations for learning represent the knowledge development (both intellectual and social) that we advocate to achieve success in our world and which ePortfolios so richly enable. They provide structure for learners to manage the knowledge that they gain both inside and outside the classroom. Students today have access to more information than in the past. They have the ability to network with their friends and family members online, to make connections to a variety of contacts for both professional and personal reasons, and to tap into those networks for answers to thoughts or questions that they might have. The challenge that exists when learners have so much information at their fingertips is how to clearly organize, connect, and evaluate that information—how to become, as Baxter Magolda advocates, “self-authors.” Beyond making connections *between* information, learners also need to *think through* how that information helps them to *know* and *understand* the world—in other words, to understand how their existing knowledge provides a framework for their understanding, how their values shape those frameworks, and how the relationships they engage in provide alternate perspectives (8).

In the example shown in Figure 1.4 and its accompanying text box (the first reflection written at the beginning of a course on sexual ethics), the student, Vanessa, clearly connects her existing knowledge about sexual ethics to her own values as well as to the relationship with her mother that provides a framework for her to understand the course material.

For educators, one of the challenges of dealing with today’s learners is how to manage the existing knowledge and expectations that come into the classroom and that shape and frame the way that students understand material presented to them. Providing students with an opportunity to articulate why it is they know what they know is essential for learning and making connections. This example also highlights how useful it is for the instructor to have a clear sense of where students are coming from in order to move through the course materials in a way that will be meaningful for them.

Figure 1.4 Sexual Ethics ePortfolio of Vanessa LeBlond

Sexual Ethics: The Basics	<i>Back to Basics: Deconstructing Sexual Ethics</i>	
My Perspective	By: Vanessa LeBlond	
Gender Stereotypes		
Precis		
Media and Sexual Ethics		
Pop Culture Articles		
Christians and BDSM		
Religions and Sexual Ethics		
Final Conclusions		
References		

Definition: Sexual ethics is a sub-category of ethics that refers to acts that fall within the broad spectrum of human sexual behavior, and sexual intercourse in particular. Questions of sexual ethics can be organized into issues related to consent, issues related to the institution of marriage such as marital fidelity and premarital and non-marital sex, issues related to sexuality, questions about how gender and power are expressed through sexual behavior, questions about how individuals relate to society, and questions about how individual behavior impacts public health concerns.	What Questions Emerge When Thinking About Sexual Ethics? -What are sexual ethics? -What are my sexual ethics? -What should be considered ethically wrong? -What should be considered ethically right? -Do sexual ethics pertain to everyone? -What would change my perspective on sexual ethics?	Objectives: - Maintain an open mind to new perspectives and experiences - Strive to deconstruct misconceptions and stereotypes that revolve around sexuality - Critically analyse various topics dealing with sexual ethics - Conduct research on sexual ethics - Reflect on and articulate my own view of sexual ethics in relation to the research literature and the "real" world.
---	---	---

Source: Vanessa LeBlond, 2008.

<http://eport.uwaterloo.ca/html/stitch.php?s=18339545948747&id=945668141307>

"I think of myself as a very liberal and open-minded person, so my personal belief on the subject is that there shouldn't be such strict forms and restrictions in regards to sexuality, because it is fluid. I feel that people should be able to do what they want with whomever they choose, so long as they (and all people involved) are consenting, and not hurting anyone else (unless, of course, pain is part of what was consented to in some cases). I think I hold this view because of my own personality and experiences, but also in part because of how I was raised. I was raised in a Catholic family, but my mother has always been very liberal and talked to me openly about many subjects. Because of that, I have gained the view that people should be allowed to follow their own sexuality, because ethics implies that there are right and wrong ways of fulfilling your sexuality. I think in most cases, that isn't true."

Learning in this new paradigm, then, involves the ability of learners to integrate all of the information that they have with new information that they gain while at college or university. As Mary Taylor Huber and Pat Hutchings have pointed out, "one of the greatest challenges in higher education is to foster students' abilities to integrate their learning across contexts and over time. Learning that helps develop

integrative capacities is important because it builds habits of mind that prepare students to make informed judgments in the conduct of personal, professional, and civic life” (2004, 1). In other words, integrative learning with ePortfolios encourages students to document their own educational journey over time and across the various domains of their lives as they demonstrate their skills and abilities.

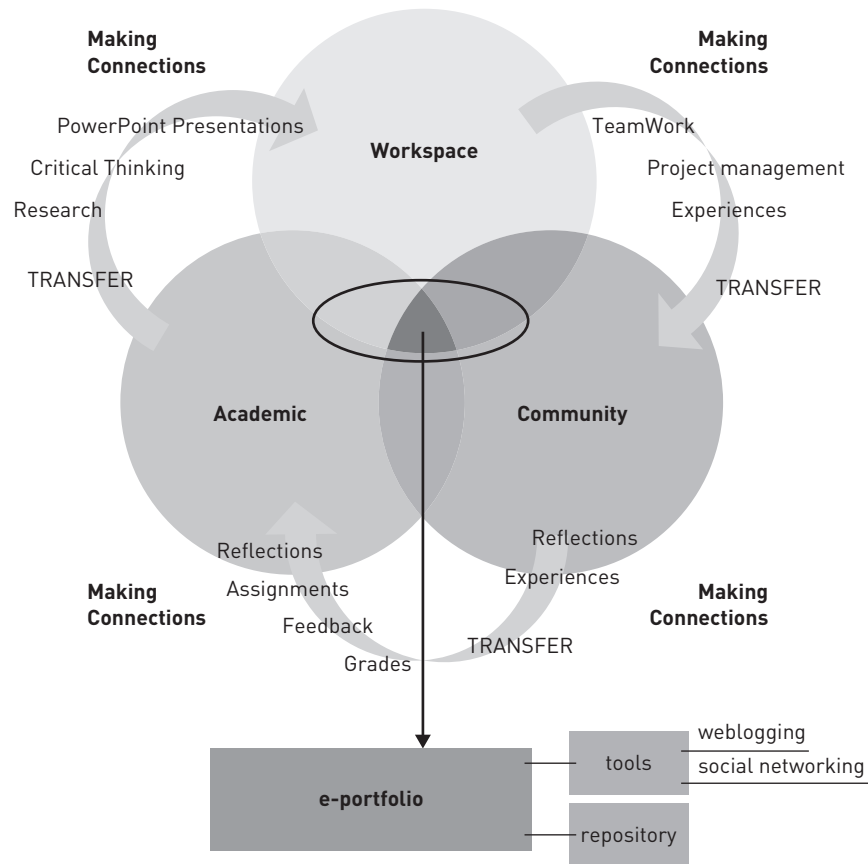
The concept of the learning landscape (see Figure 1.5) acknowledges the learning that students engage in beyond the rigid structure of degree outcomes and requirements.

Experiences from a variety of learning contexts can be incorporated, including social networking with faculty mentors, peers, and employers. Most instructors design learning activities based on the ways that they were taught in their own disciplinary contexts. However, contemporary learners approach their understanding of particular materials in a very different way from the learners of even ten years ago. Today, it is not just a question of ensuring that students have learned the material in order to pass tests and exams, or even to move on to the next course. Rather, learners need to evaluate the knowledge claims offered by authorities, construct their own convictions, seek out new possibilities and sources, and apply the knowledge they are acquiring to complex real-world problems. As Baxter-Magolda and King (2004) point out, learners need to be aware of their own role in composing reality as they move through the world—they need to develop a sense of how and why they have particular belief systems, where those belief systems were developed, and what points in their learning caused their belief systems to shift or change. As Vanessa points out in her Sexual Ethics ePortfolio,

Since the beginning of this semester, my view on sexual ethics has changed. In watching the movie *Kids* I realize even more how many people, and more importantly kids, are walking around without any sexual ethics. I think it is important for people to have respect for each other as sexual human beings and that consent and education are incredibly important.

This shift in Vanessa’s thinking demonstrates the way that her reflection on new materials presented during the course facilitated her internalization of ideas that were meaningful for her. In this case, a film raised questions about the role of education in sexual ethics. This type of intellectual identity development is

Figure 1.5 The Learning Landscape



Source: Adapted from Tosh, Werdmuller, Chen, Penny Light, and Haywood, 2006, 27.

critical, of course, for students learning at college and university. Also important is the development of students' social identity, which is often found in how they represent themselves on social networking sites like Facebook, LinkedIn, or personal web sites (Williams, 2007). Ideally, learners should be encouraged to think through how those different identities are connected as Vanessa does in her ePortfolio. Facilitating these connections requires a more holistic approach to learning that emphasizes intentionality as a recurring theme and touchpoint

in the process of identity development. In other words, the goal should be to foster learners' abilities to draw connections between their different identities and to be aware of when to take note of particular learning instances, gaps in their knowledge, and new strategies for moving forward. ePortfolios are useful for this type of learning because they allow learners to gather and store in one place the various artifacts that are evidence of their learning in different contexts.

This act of being able to represent one's own learning and, by connection, one's identity in relation to that learning is the most significant contribution of ePortfolios. Of course, at first, students do not always see the benefit of capturing their learning in an ePortfolio. Part of the requirements of using ePortfolios for learning is the need to clearly communicate to learners why they are using ePortfolios, how the use of ePortfolios will assist them in developing and documenting their own identities, and how that documentation can help them to make connections between the learning that happens in different contexts. We discuss the design of such learning instances more fully in Chapter Three, but it is important to note at this point the need for instructors to clearly communicate the goals and expectations of using ePortfolios in their classrooms.

Perhaps the most exciting part of exploring how ePortfolios can engage learners in developing their own identities is the transformative potential of such tools for allowing learners to reflect on who they are and how their knowledge, skills, and abilities will allow them to contribute to the world. While the value of this goal is widely acknowledged, in institutions of higher education we spend far too little time focusing on this important aspect of learning. Instead, we tend to emphasize the content to be learned and, by extrapolation, the products of that learning. However, as instructors we have a moral imperative to focus on the *process* of learning. This approach ensures that learners who graduate from our institutions develop the habits of mind in order to contribute meaningfully to society. A focus on student engagement or responsible citizenship is important to ensure that our learners are mindful about the fact that they will, indeed, need to contribute in some way to the world around them. Of course, this should not only happen in classrooms but should also form a significant part of what administrators, academic affairs, and student affairs leaders are doing to engage learners across institutions. The type of integrative learning by students that is captured in their ePortfolios is not only important for their own intellectual and social identity development, but the "containers" of authentic evidence that they create can

also serve as a catalyst for conversations about what learning is occurring among faculty and other stakeholders within and across departments and programs (Chen and Penny Light, 2010). Mindful conversations among those who have a stake in students' documentation of their learning can help to create coherence across learning experiences and among stakeholders.

COHERENCE IN THE LEARNING EXPERIENCE

Students

Documenting learning for students is important for several reasons. First, students today need to be able to use technology mindfully and with a purpose. ePortfolios provide one way for students to engage with the online environment and social networking tools in an integrative way that promotes the development of their intellectual and social identities. With technological advances, students can document their learning using not only text reflections but also video blogs, audio recordings, and other media that demonstrate their knowledge, skills, and abilities to the world. ePortfolios provide a way for students to make a variety of connections as they develop both their social and intellectual capacities and skills (see Figure 1.6 for an example).

Faculty Instructors

Documenting learning for faculty is important in many respects. First, the ability to explore student ePortfolios provides instructors with easy access to formal and informal means of assessing the learning that is happening in their classrooms. Student reflections and other ePortfolio-related assignments offer instructors and students alike the opportunity to track learning over the course of the term. For instructors, this allows the timing and pace of course materials to be adjusted in the event that clarification is required of certain concepts or content, ensuring that student learning and engagement are maximized. For example, in the Sexual Ethics course mentioned earlier, many students, like Vanessa, indicated an interest in exploring in more detail the ways that sexual health education could have a positive impact on the development of sexual ethical behavior in young people. Because students provided that feedback while the course was still in progress, the instructor was able to make adjustments to the course topic schedule to facilitate this learning (an additional film was shown, a guest

Figure 1.6 History and Film ePortfolio of Chris Moffat



Source: Chris Moffat, 2006 <http://www.cfkeep.org/html/snapshot.php?id=89087256313383>

speaker was brought in, and an online discussion was established). Beyond their formative assessment capabilities, student ePortfolios can also represent an excellent source for summative assessment. Faculty members can observe the learning that happens over the course of the term and ensure that learners have understood both the content and the process thinking specific to that discipline. Tools like rubrics are one way that faculty can assess student ePortfolios. Beyond the classroom, ePortfolios can also provide a window for others (chairs, deans, alumni, employers, and so on) to view what is happening within the classroom and on the campus. The learning that is occurring within a given course often goes unnoticed beyond the classroom; in other words, what happens in an individual faculty member's classroom often stays in the classroom. In addition, an ePortfolio component that is incorporated into multiple courses within a curriculum or department allows faculty members to not only observe how learning outcomes are being addressed and interpreted by students but also identify when concepts and content should be introduced and reinforced. This can help a department

to ensure that students are actually achieving the learning that is required of graduates of a particular program. For example, in the Sexuality, Marriage, and Family Studies program in which the sexual ethics course mentioned earlier is located, department members identified milestones in the program where ethics could be developed and documented by students as they worked toward a capstone experience at the end of their degree (see Figure 1.7). This scaffolding of student learning will be discussed in further detail in Chapter Three.

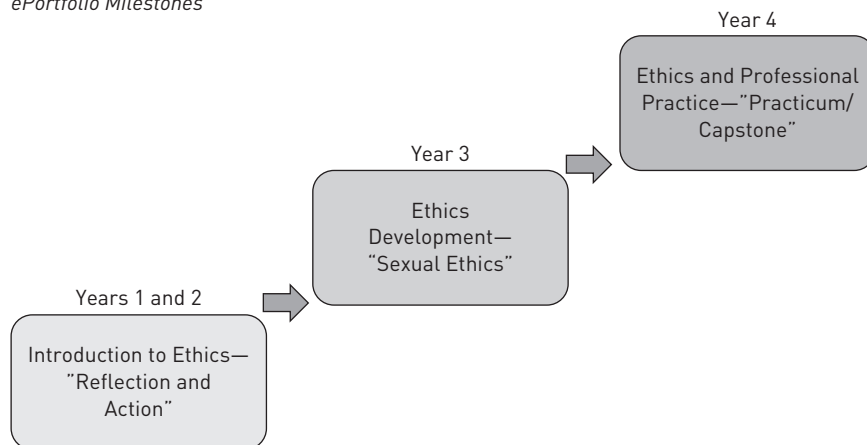
Student Affairs and Beyond

There are many reasons why student ePortfolios can be useful to student affairs practitioners. In an age when student cocurricular learning is increasingly viewed as important as curricular learning, ePortfolios can provide a way for student affairs practitioners and faculty members to have a conversation about the ways in which those curricular and cocurricular learning outcomes are connected (Garis and Dalton, 2007). For instance, being aware of the various initiatives taking place on the student affairs side can help faculty members to think through the different

Figure 1.7 Mapping of ePortfolio Milestones for Ethics Development

Department of Sexuality, Marriage, and Family Studies

Skill Development: *Ethical and Professional Thinking*
ePortfolio Milestones



ways in which learning outcomes can be met and to facilitate knowledge transfer and deep learning among their students. For instance, in the sexual ethics course, students are encouraged to bring their work and volunteer experiences into their thinking about ethics. Because many students who take this course volunteer at agencies that provide sexual health education, they have an opportunity to integrate the learning that happens in that context with the theory and discussions presented in class. Similarly, in a history course where students are asked to develop their critical thinking skills or their historical thinking, students can provide evidence of how they do this in the history class and of the ways that they can apply similar kinds of thinking in other contexts. For example, an engineering student who is taking a history course can discuss how he engages in critical thinking in his history course, in his engineering classes, and while building a solar car for competition. Just as instructors can benefit from hearing about what types of learning is happening outside the classroom and better engage students, so too can other stakeholders on a campus. A living-learning program in residential life can contribute to the development of professional abilities such as teamwork skills in partnership with instructors who are teaching in the accounting program. This collaboration can provide extra opportunities for students to be introduced to such skills that can then be reinforced and mastered in residences where students have opportunities to build on the collaborative skills they have begun to develop in academic courses. Beyond student affairs practitioners, other stakeholders can be engaged in benefiting from the learning that is being documented in ePortfolios. For instance, alumni relations might gain insight into the kinds of activities and programs that are important and exciting for future alumni in order to establish a foundation for alumni relations after graduation.

Assessment

As mentioned earlier, assessment is an important aspect for all postsecondary institutions. Whether the purpose of the assessment is for accreditation or achievement of student learning outcomes, carefully designed assignments that incorporate an ePortfolio approach can result in a multimedia collection of evidence that is more authentic and more efficiently collected through partnerships with students over time. Triangulation of both qualitative and quantitative data from student ePortfolios and sources like the National Survey of Student

Engagement (NSSE) program identifies ways in which students are meeting learning outcomes and can provide a more meaningful picture about the learning and engagement that is taking place on a particular campus (Eynon, 2009a).

DOCUMENTING LEARNING — INTEGRATED INSTRUCTION WITH BENEFITS FOR ALL

Regardless of which stakeholder group is using the ePortfolio, these tools provide a much richer set of data than traditional tools. An important task for faculty instructors using ePortfolios is thinking through which other stakeholders on their campus would be interested in the data contained within student ePortfolios. Although making a connection to student affairs practitioners may not be the focus of the ePortfolio initiative as a whole, being mindful of the variety of ways that the evidence in students' ePortfolios can be used by different stakeholders can assist faculty in developing uses for the ePortfolio beyond the classroom. In addition, an emphasis on the importance of documenting learning for students will communicate the importance and value of a more holistic approach to learning that is needed today. As a recent report released by AAC&U's National Council on Liberal Engagement and America's Promise (LEAP) indicates,

Only a few years ago, Americans envisioned a future in which this nation would be the world's only superpower. Today, it is clear that the United States—and individual Americans—will be challenged to engage in unprecedented ways with the global community, collaboratively and competitively. These seismic waves of dislocating change will only intensify. The world in which today's students will make choices and compose lives is one of disruption rather than certainty, and of interdependence rather than insularity . . . The LEAP National Leadership Council recommends, in sum, an education that intentionally fosters, across multiple fields of study, wide-ranging knowledge of science, cultures, and society; high-level intellectual and practical skills; an active commitment to personal and social responsibility; and the demonstrated ability to apply learning to complex problems and challenges. The council further calls on educators to help students become “intentional learners” who focus, across ascending levels of study and diverse academic programs, on achieving the essential learning outcomes. But to help students do this, educational communities will also have to become

far more intentional themselves—both about the kinds of learning students need, and about effective educational practices that help students learn to integrate and apply their learning. (National Leadership Council for Liberal Education and America's Promise, 2007, 6–9)

The ability to document learning in ePortfolios affords the broader educational community within higher education with a potentially richer set of tools and practices to address the needs of not only today's learners but also the complex problems faced by our ever-changing society.

LEAP Essential Learning Outcomes

Beginning in school, and continuing at successively higher levels across their college studies, students should prepare for twenty-first-century challenges by gaining:

Knowledge of Human Cultures and the Physical and Natural World

- Through study in the sciences and mathematics, social sciences, humanities, histories, languages, and the arts

Focused by engagement with big questions, both contemporary and enduring

Intellectual and Practical Skills, including

- Inquiry and analysis
- Critical and creative thinking
- Written and oral communication
- Quantitative literacy
- Information literacy
- Teamwork and problem solving

Practiced extensively, across the curriculum, in the context of progressively more challenging problems, projects, and standards for performance

Personal and Social Responsibility, including

- Civic knowledge and engagement—local and global
- Intercultural knowledge and competence
- Ethical reasoning and action
- Foundations and skills for lifelong learning

Anchored through active involvement with diverse communities and real-world challenges

Integrative and Applied Learning, including

- Synthesis and advanced accomplishment across general and specialized studies

Demonstrated through the application of knowledge, skills, and responsibilities to new settings and complex problems

Note: This listing was developed through a multiyear dialogue with hundreds of colleges and universities about needed goals for student learning; analysis of a long series of recommendations and reports from the business community; and analysis of the accreditation requirements for engineering, business, nursing, and teacher education. The findings are documented in previous publications of the Association of American Colleges and Universities: *Greater Expectations: A New Vision for Learning as a Nation Goes to College* (2002), *Taking Responsibility for the Quality of the Baccalaureate Degree* (2004), and *College Learning for the New Global Century* (2007). For further information, see www.aacu.org/leap.

Source: Adapted from AAC&U, 2007. http://www.aacu.org/leap/documents/EssentialOutcomes_Chart.pdf.