# AePR

Summer 2020, Vol. 4, Issue 1

THE AAEEBL ePORTFOLIO REVIEW

# ePortfolio Platforms

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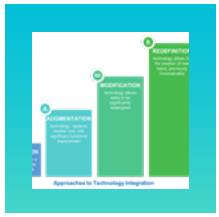

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# About

The AAEEBL ePortfolio Review (AePR) invites you to submit articles and reports covering the broad area of ePortfolio use. We publish articles about pedagogy, research, technical, and organizational issues bi-annually. Our readership includes ePortfolio practitioners, administrators, and students. AePR is an online journal serving the needs of the global ePortfolio community and seeks to promote portfolio learning as a major way to transform higher education.

The AePR is a theme-based journal; therefore, acceptance is competitive. After a paper proposal has been accepted for a specific issue, the authors are paired with one of our peer reviewers. Paper proposals submitted for a current issue may be considered for a subsequent issue if it fits the upcoming theme.

## Article Types

We're particularly interested in the following types of articles:

- Longer articles (3,000 to 5,000 words) about practical research, administrative reports, or case studies with generalizable results – again, not as peer-reviewed research but as reports.
- Short articles (1,000 to 1,500 words) discussing a case study at an institution/course, offering advice and opinions to other ePortfolio practitioners.
- How-to articles, tutorials on specific tools or approaches (500 to 1,500 words).
- Interviews (500 to 1,000 words) with key individuals directly involved with the use of ePortfolios.
- Announcements (up to 300 words) of items regarding the use of ePortfolios in the field.

For further details about making paper proposals, see page 68.

# From the AAEEBL Board

## Dear Readers,

We are glad you found us, readers. The AAEEBL board is happy to share this issue of the AePR with you. In spite of the pandemic and the strain it has put on our authors and our volunteer editorial board, this is an exciting issue that will help you conceptualize your practice using ePortfolios.

Initially, this issue was supposed to feature our largest publication yet with fourteen articles, but the pandemic slowed progress for many of our authors. The good news is that many of these articles will be featured in our next edition. We want to thank the AePR editorial staff for their Herculean efforts in getting this issue out. Not only were they all managing their own careers and families in a pandemic, our managing editor, Barbara Ramirez, also experienced a tornado.

The focus of this issue is ePortfolio Programs: Platforms, Processes, and Sustainability. The articles speak to the evolving maturity of the ePortfolio field, with each focusing on a range of issues and uses that represent deep knowledge and experience in the field. The articles speak to the diversity of uses for ePortfolios, consider important factors to address in implementation, and address how we can build and sustain ePortfolios beyond single classrooms or programs. Each should inspire you to advance ePortfolio use on your campus.

We are excited about our next edition, also. In the pandemic, AAEEBL launched its first online annual meeting in July. While we all would have rather seen one another face-to-face, the month-long events brought our community together, and as usual, we supported one another and learned a lot. As is our tradition, the next edition will focus on the theme of our annual meeting, Doing it Right: ePortfolios and Ethics, Practices, and Technologies. We hope you will return to learn from your colleagues again!

Please keep your eyes out for more online learning opportunities in the coming months as well as opportunities for our members. Visit the AAEEBL website!

Happy reading.

**Candyce Reynolds**

Chair and Professor

Educational Leadership and Policy

Portland State University

# From the Editor's Desk

## Dear Readers,

For us to state that a seismic event has transpired in higher education is redundant. Institutions throughout higher ed have accomplished something that even a month prior to the transition to online courses would have seemed incredible, unthinkable. Now higher ed institutions face the prospect of an entire semester taught entirely online. The Chronicle of Higher Education (CHE) keeps a current tally of institutions going online here. For the foreseeable future—these days, a horizon of about 2-3 weeks—our learning communities are scattered and fragmented.

### Preserving Our Learning Communities

How can we give our suddenly-online learning communities an organic digital space to thrive? Learning management system (LMS) announcements and discussions are not the answer. For one thing, these communication channels are typically one-way. A campus or department could organize some online discussions in a stand-alone course, but these are unwieldy to set up and maintain. Nor is a semester-to-semester discussion particularly organic.

One digital learning community building block could be ePortfolios. If you are reading this, you already know why. COVID-19 is a national and international catastrophe, but there are positives to seek in every situation. If your program, department, or campus hasn't yet created an ePortfolio program, the coming months may be an opportunity to introduce it. And if ePortfolio practice has a foothold somewhere on campus, now could be the time to advocate its expansion.

All campuses, departments, and programs are learning communities. Promoting the use of ePortfolio in yours just might be your most enduring contribution during this time of social and academic upheaval.

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# Design, Development, and Implementation of an ePortfolio Platform To Enhance Teaching Practice and Reward Teaching Excellence in Higher Education

Authors: Gary M. Velan & Patsie Polly
Review Editor: Mark G. Urtel

## The Challenge

Research has traditionally been rewarded and recognized more than teaching at leading universities. One reason for this disparity is that measures of research excellence are widely used and accepted. In contrast, while excellent teachers share common characteristics, students, peers, and administrators have varied conceptions of excellent teaching. As a consequence, there are currently no generally accepted measures of teaching excellence (Wood and Su, 2017).

Attempts to evaluate teachers and teaching in higher education have long proved to be problematic (Marsh, 2007). Existing literature reveals controversy regarding the reliability and validity of student feedback surveys, peer review of teaching, education portfolios, and student learning outcomes as measures of educational excellence (Marsh, 2007; Gunn and Fisk, 2013). Even the concept of teaching excellence in higher education is ill-defined and controversial (Gunn and Fisk, 2013; Wood and Su, 2017). Indeed, many academics consider educational excellence to be unmeasurable (Wood and Su, 2017). Nevertheless, policy initiatives such as the UK Teaching Excellence Framework are intended to raise the standard of teaching across all universities. In the current global environment for higher education, it is appropriate that institutions develop rigorous measures to recognize and reward excellent teaching.

But how can the multi-dimensional concept of teaching excellence be measured? Ideally, valid measures of the inputs (qualifications and professional development), process (teaching practice) and outputs (student learning) of education would all be incorporated. Evaluating student learning as a measure of teaching is clearly of great importance. However, many contextual and institutional factors affect students' learning; hence, the influence of the teacher is difficult to isolate. As Gibbs (2016) asserts, measures of learning gains would be the most appropriate indicator of quality teaching, but such measures are not yet available. Furthermore, better measures of the learning and teaching process, such as student engagement surveys, require further development. While student surveys and peer review of teachers have roles to play in evidencing educational excellence, they do not provide a comprehensive view of teaching practice, either alone or in combination (Beckmann, 2016). More holistic measures of teaching excellence are, therefore, required (Gibbs, 2008).

## Our Response

In response to this challenge, Fellows of the UNSW Scientia Education Academy were awarded an internal grant to develop an ePortfolio, which would enable teachers at the University of New South Wales (UNSW) to document and demonstrate their educational achievements. To inform the development of

| UK Higher Education Academy | Australian University Teaching Criteria and Standards | myEducation Portfolio |
|---|---|---|
| Professional learning<br>Scholarship of learning and teaching | Integration of scholarship, research, and professional activities with teaching and in support of learning<br>Evaluation of practice and continuing professional development | Disciplinary expertise and professional development |
| Student engagement | Teaching and supporting student learning<br>Developing effective environments, student support, and guidance | Teaching and supporting student learning |
| Curriculum development | Design and planning of learning activities<br>Assessment and giving feedback to students | Design and development of learning activities and assessment |
| Leadership and collaboration | Professional and personal effectiveness | Educational leadership |

Table 1. Alignment of the Scope of Education Activities Outlined by the UK Higher Education Academy, the Australian University Teaching Criteria and Standards and myEducation Portfolio

the ePortfolio, we conducted a two-stage Delphi study to delineate the dimensions of effective teaching in higher education. This Delphi process incorporated academics with teaching leadership roles (n=65) from a variety of disciplines at UNSW, across Australia and internationally, to draw on a variety of perspectives in conceptions of teaching excellence (Abbas, Abbas, Brayman, Brennan, Gantogtokh, 2016). The first round of the Delphi process identified 13 dimensions of effective teaching practice in higher education.

Respondents in the second round of the Delphi process (n=58) prioritized eight of those dimensions for incorporation into an education portfolio. A community of practice has already been established through this process. Feedback from the project advisory group and the education-focused Communities of Practice (CoPs) at UNSW resulted in further refinement and consolidation into four dimensions, each with several associated criteria: teaching and supporting learning; design and development of learning activities and assessment; disciplinary expertise and professional development; and educational leadership. The resulting dimensions differ from existing standards, including the UK Professional Standards Framework (Higher Education Academy, 2011) and the Australian University Teaching Criteria and Standards (Chalmers et al., 2014), yet align well with those frameworks (Table 1).

## Outcomes

The dimensions were operationalized in an online portfolio platform that enables academics to provide evidence of their teaching achievements. The project team scanned the environment for existing ePortfolio tools that might be employed to implement the above-mentioned dimensions and criteria in an education portfolio for UNSW academic staff. As no existing software met all the requirements for the proposed portfolio, the UNSW Information Technology (IT) team was subsequently engaged to develop a proof of concept (PoC) for the ePortfolio platform, known as myEducation Portfolio. Members of the project team entered evidence in their portfolios to test the usability and the functionality of the PoC.

Following feedback on the portfolio PoC from members of the project team and education-focused communities of practice at the UNSW,

the business requirements for a full build of the portfolio were developed. UNSW IT then completed the process of building the portfolio for use by academic staff at the university. Standards of practice were subsequently developed for each dimension at each academic level, providing transparency regarding the evidence required by academics to demonstrate teaching excellence. Following feedback from the UNSW staff, the dimensions and associated criteria were refined, along with indicative practice standards, guidelines for collecting evidence, and exemplar profiles across a variety of disciplines.

Importantly, the integration of ePortfolio pedagogy in this development process for academics helps to create a habit of mind. The platform, myEducation Portfolio, provides a digital professional-personal space for educators to develop skills in reflective practice and curation of artifacts as evidence of achievement in alignment with the dimensions and associated criteria. myEducation Portfolio has been incorporated into academic promotion processes at UNSW, facilitated by the development of a myCases tool to help staff use the evidence in their portfolio for promotion applications, teaching awards, and fellowships. Planned future developments include utilizing myEducation Portfolio to inform career development conversations for teaching staff, as well as enabling public display of portfolios to disseminate good practice and to facilitate collaborations, both within the university and globally.

## About the Authors

**Gary Velan** is Professor in Pathology and an award-winning medical educator at UNSW Sydney. He is currently Senior Vice Dean (Education) in Medicine and Co-Director of the UNSW Scientia Education Academy. Gary's innovations include the introduction of online formative assessments to UNSW, the development of virtual microscopy adaptive tutorials and online concept maps with automated feedback for learning and assessment as well as leading the development of myEducation Portfolio. He is internationally recognized for research in medical education, focusing on eLearning, assessment and feedback. For more information, please see the website.

**Patsie Polly** is a Senior Fellow of the Higher Education Academy-UK, UNSW Scientia Education Fellow, Education Focussed Champion and Professor in Pathology within the School of Medical Sciences, UNSW Medicine, UNSW Sydney. Recognized nationally and internationally as a medical research scientist, leading teacher and innovative education researcher/practitioner, she has infused her extensive medical research experience into the classroom by strategically integrating course and program-wide ePortfolio implementation/use in the sciences at the UNSW Sydney to facilitate student reflective practice and professional skills development. Patsie is an invited international AAEEBL Board member and chair of the AAEEBL ePortfolio research special interest group.

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# Student Engagement and Reflective Learning Mediated by ePortfolios: Observations of an ESL Instructor

Author: Rita Zuba Prokopetz
Review Editor: Carra Leah Hood

## Abstract

This article reports on observations by an English as a second language (ESL) instructor at a learning center in a Canadian institution where students learn communication skills required for future employment and academic purposes. In this five-month, intermediate-level blended ESL program of studies, the students develop a capstone ePortfolio project as part of their final speaking task. The students' capstone projects and presentation of their ePortfolios include feedback on both language and college-readiness skills — communication and information technology, self-management, and strategic competence (metacognitive, social, affective). During the instructor's observations of her students, she became aware of the interconnectedness of four constructs — pedagogy, technology, interaction, reflection — and the interplay of three domains – cognitive, affective, conative — as the students sought feedback from each other throughout the development of their projects. She perceived the meaningful interaction among students as members of their own ePortfolio community at various stages of the ePortfolio development process. This interaction was an affirmation of how ePortfolio pedagogy relies on instructor guidance and modeling in addition to feedback from all members of an ePortfolio subculture in Internet learning spaces — course facilitator, tutor, technologist, and the main stakeholders, the students themselves. The capstone ePortfolio project is an innovative way of learning that rests on the constructivist paradigm, more specifically, ecological constructivism, and undergirds the abilities of the students in the cognitive, affective, and conative domains. During the ePortfolio development process, the students engaged with each other and their projects, learned to persevere in their learning community, and strengthened themselves personally, academically, and professionally.

## Background

My observations of student engagement and reflective learning mediated by ePortfolios result from my participation as an instructor of English as a second language (ESL) in a blended program for the past two years (2018-2019). As a participant-observer in ePortfolio development in four iterations of an intermediate-level, blended ESL course (Figure 1), I have experienced the versatility of this tool, and its connection with various practices that underpin deep learning in the 21st century — pedagogy, technology, interaction, and reflection. The ePortfolio pedagogy enriches student learning during the many attempts made by ePortfolio creators to learn the technology in the initial stages of their project development. During interactions with course content, platform of choice, and each other, the students learn how to identify challenges, articulate solutions, and reflect on their learning to date. This powerful pedagogy brings forth awareness of the interplay

of various domains — cognitive (intellect), affective (emotion), and conative (attitude) — as students develop their capstone ePortfolio projects.

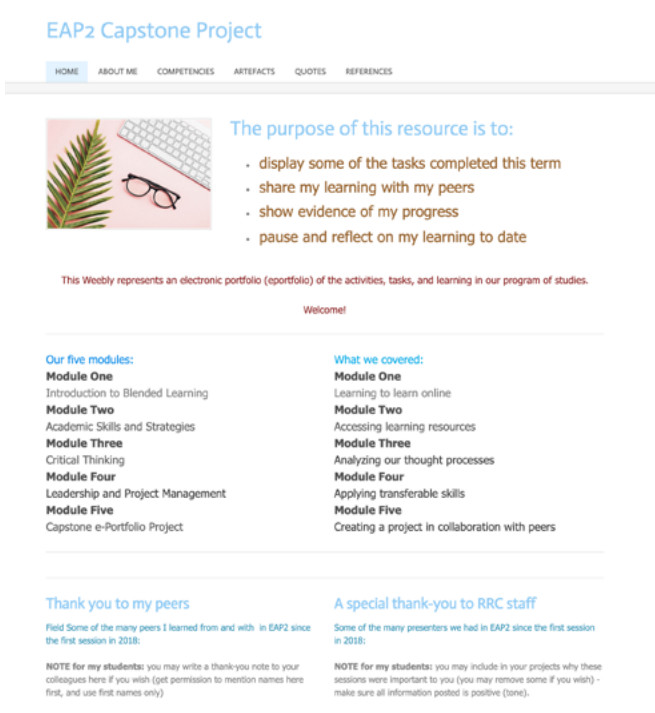


Figure 1. Five Modules of a Blended ESL Program

The assessment tasks in the five modules align with the Canadian Language Benchmarks (CLB, 2012) Stage II (CLB 7-8) language proficiency guidelines. In Module I (Introduction to Blended Learning), for example, the students interact with each other in writing (online) and in dialogues (onsite) while getting to know each other and learning to navigate their online course platform. Consequently, the students are able to demonstrate achievement of Competency 7.I - 8.I. Table 1 presents the CLB Guide's four competencies in speaking as described in the CLB Guide as aligned with the ePortfolio goals that lead to enhancement of both language and college-readiness skills – communication and information technology, self-management, and strategic competence (metacognitive/social/affective).

| Speaking competencies | ePortfolio goals |
|---|---|
| 7-8.I Interacting with others | Giving and receiving feedback |
| 7-8.II Giving instructions | Choosing a platform |
| 7-8.III Getting things done | Creating pages of the ePortfolio |
| 7-8.IV Sharing information | Presenting final project |

Table 1. Speaking Competencies and ePortfolio Goals
Note: Adapted from CLB Guide (2012, pp.20-23)

Since the first iteration of the course in Spring 2018, there has been 100% student retention with more than 50% of the students achieving the goals they set out in the first month of their program of studies. The previous two courses (Spring and Fall 2019) and the current one (Spring 2020) comprise twenty intermediate-level adult ESL learners each. Some of the students are referred to the learning center by the language assessment agency and are then placed in a blended course as their first or second choice. Many of the students, however, are current students who move up a level from a previous class (CLB 6-7) and choose a blended course format as they continue their language learning (online learning is gradually becoming the learning format of choice by ESL students at the center). Upon completion of the five modules in the program (see Figure 1), the students demonstrate college-readiness skills that go beyond language-learning. They demonstrate evidence of computer literacy, online research skills, proper netiquette and citation abilities (communication and information technology). In addition, since the ePortfolio individual projects are completed by the students entirely online, the students are able not only to apply and strengthen their organizational and time management skills but also to demonstrate a certain level of self-directedness. As a final individual project, the capstone ePortfolio is completed in collaboration with peers. Therefore, in addition to attentiveness and responsiveness to feedback, strategic competence (metacognitive, social, affective) also underpins the successful completion of these projects.

## Beyond Language Learning

In the past two years, I have observed four iterations of a five-month blended ESL course that culminates with the creation

of ePortfolios where students demonstrated competency levels beyond the four language skills. During the creation of their ePortfolios as a final assignment in a blended course, the 20 intermediate-level language learners unveiled aspects of both emotion and intellect — the ability to both complete the task at hand as well as to express feelings about the process. There was also a gradual development of social-emotional competence during the engagement of the students with one another as part of and about their learning. In addition, the students demonstrated their ability to participate in Internet culture, a culture characterized by how we act, interact, and present ourselves (Kirmayer, Rikhel, & Rahimi, 2013; Porter, 1997) in our culturally diverse online and blended learning space. My students exhibited Foster's (1997) characterization of a subculture as they grappled with the technology as a group, shared common goals, nurtured relationships in the community, and generated interactions with peers. During the first four months of their program of studies, the students learned to rely on one another for peer-assessment of their tasks in the four language skill areas – listening, speaking, reading, and writing. As a result, in the final module, there was an observable engagement of these ePortfolio creators with both their projects and each other as aligned with a more ecological approach to constructivism (Hoven & Palalas, 2011, 2016). As posited by Hoven and Palalas (2016), ecological constructivism relies on affordances of the environment, and highlights the mutual interaction of the systems operating within and internal to the learners. I have been able to observe students' gradual awareness of their own learning and attitudes when performing in a community of learners in an ePortfolio subculture (Figure 2).

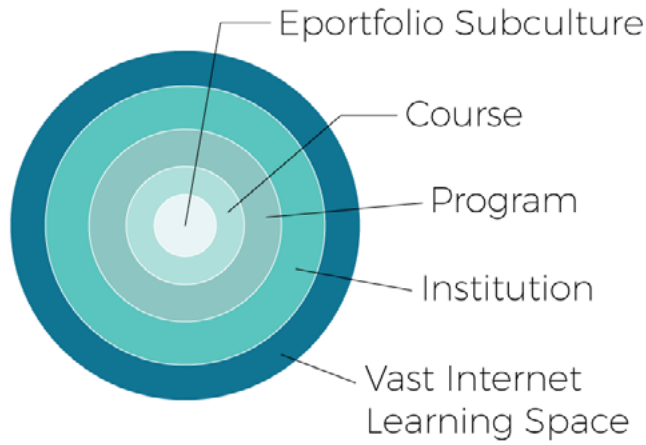


Figure 2. ePortfolio as a Subculture of Internet Culture

## Learning in ePortfolio Subculture

ePortfolios enable learners to create drafts of their artifacts, share them with peers and instructors, reflect on comments made, and improve on their work. This innovative way of learning and teaching requires interaction and relies on the members of the community for both modeling and feedback. ePortfolio pedagogy aligns with a more ecological approach of the constructivist paradigm and undergirds our attitudes as well as our intellectual and emotional abilities. As the students develop their projects, they engage with each other to discuss areas related to the technology (platform), the process (reflection and interaction), and project requirements; these are challenging areas they need to overcome. As they proceed, they begin to demonstrate aspects of the domains outlined by Huitt and Cain (2005): cognitive (what I need to do), affective (how I plan to do it), and conative (why I am making such decisions). Since I had undergone a capstone ePortfolio project experience both in my graduate and doctoral programs of studies, I decided to introduce this innovative way to learn in my practice. In the context of doing so, I began to understand the importance of professional self-development mediated by ePortfolios (Zuba Prokopetz, 2018) to help educators and learners attain the higher-order level of competencies required for success in an increasingly digital society. With the rapid development of information

and communication technologies (ICT), the learning and teaching of digital competencies is now essential. This aspect poses a challenge for institutions worldwide, since universities currently face the challenge of preparing faculty and academic staff for pedagogy and learning mediated by the Internet. As a result, without adequate professional development, educators may find themselves unable to properly prepare their students (Benito-Osorio, Peris-Ortiz, Armengot, & Colino, 2013).

## Overcoming Difficulties

Using the technology and choosing an ePortfolio platform were initially the main areas of concern for the students who, as a group, grappled with these two areas of competency and became stronger learners in the process. During their problem-solving and decision-making interactions, the students created their own ePortfolio subculture within the course. Such experiences made me realize the connection of the various concepts that underpin deep learning in the 21st century — pedagogy, technology, interaction, and reflection. I finally understood that although the technology had presented itself as the first difficulty, it was the element of reflection and its interconnectedness with various constructs that proved to be both challenging and rewarding for the students. When ePortfolio creators become aware of their own capabilities, they strive to go further in their project development. They also develop a certain resiliency toward the difficulties with the product (choice of platform) and process (reflection, articulation of learning to date). As such, moments of frustration are replaced with learning episodes of discernment, contentment, and fulfillment. The process involved in these pedagogically sound and theoretically underpinned projects align with the domains described by Huitt and Cain (2005): cognitive domain (my learning), affective domain (my feeling about my learning), and conative domain (rationale for my learning). Once cognition (what), affect (how), and conation (why) begin to work in tandem, students are better able to engage in meaningful learning and reflection. As such, they create different products to demonstrate their individualized learning in their online community. They rely on self-motivation, curiosity, self-regulation, and personal passion as they attempt to include artistry and creativity to demonstrate the learning that has taken place over a period of time. At this point in their learning journey, the students willingly immerse themselves in the creation of their ePortfolios, thus demonstrating a level of engagement and reflective learning.

## Student Engagement and Reflective Learning

Student engagement and reflective learning become more prominent during the initial stages of creation, ongoing struggles, and various iterations of the capstone ePortfolio projects. The ePortfolios are not only the last individual project but also the final speaking assessment task of the term in a five-month blended ESL program. During the fifth and final capstone ePortfolio project learning module, there is strong student engagement, which is in part the result of, as Vaughan, Cleveland-Innes, and Garrison (2013) suggest, the use of peer review during the various project iterations. As I have observed in the previous four courses I have facilitated, peer-to-peer online interaction in ePortfolio projects is an artful demonstration of students teaching each other how to learn in a community of ePortfolio creators. Figure 3 displays graphic representations of concepts which are created individually in the first four modules of the program. These student-selected artifacts are later assembled in Slideshare as one collaborative product that is subsequently uploaded to each of the 20 individual ePortfolios. During the final student presentations, the students articulate the learning that transpired during the creation of various artifacts both individually and in collaboration with their peers. They share their perceptions of their blended ESL learning journey that culminates with the creation and presentation of their capstone ePortfolio projects. They speak eloquently of their experiences and of how they became

aware of the importance of peer engagement in the development of their final reflective projects, which is great evidence of their enhanced learning. Abu, one of the course participants in the Fall 2019 course iteration, used the following statement to express his learning experience:

> *I have looked back at my work from the first to the final draft, I feel that I should focus more on the details because some of the mistakes were simple. However, I am really enjoying the process from beginning to end. Thank you so much for your support.*
>
> *I made a plan for myself about reviewing what I have learned. Such as part of speech (I reviewed online task twice already), verb tenses, compound sentences, complex sentences, noun clauses and adjective clauses.*

As an instructor who has developed a capstone ePortfolio project in her program of studies, I describe learning experiences mediated by ePortfolios to be of a metacognitive reasoning in nature. They are enabled by the affordances of the vast spaces of the Internet, and they lead to both self-realization and self-awareness. Once the students participate in learning episodes that include ePortfolios, they become aware of what they didn't know, are able to identify how they are going to deal with the situation and why it is important for them to behave in a certain way moving forward. This approach to learning is both "transformational (involving gradual transformation in thinking processes) and transformative (causing significant changes on a personal, academic, professional levels)" (Zuba Prokopetz, 2019, p. xi).

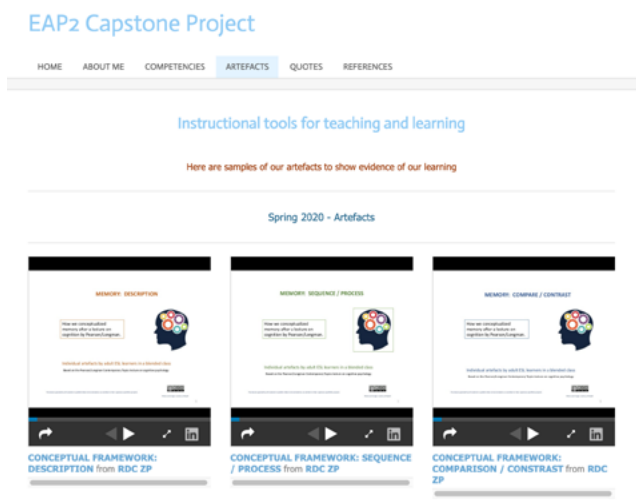


Figure 3. Individual Artifacts Assembled as a Community Project

During their in-class presentations, students share their stories about what resources were used for the production of each artifact, how the graphic representations of concepts helped them demonstrate their learning, and why their choice of specific layout and visuals aligned with their understanding of various constructs. As perceived by the students in this community of ePortfolio creators, the selected artifacts (paragraph writing, note-taking, summary, graphic representation of various concepts) differs from each other's as a result of the different lenses used throughout their project development.

## Conclusion

As an instructor of English as a second language, I have observed student engagement and reflective learning at various stages of capstone ePortfolio project development as a final learning activity in an ESL program of studies. During the initial phases of their projects, the students seek feedback from each other and rely on the resources and support they can locate. As a result, they create and strengthen an ePortfolio subculture within the course. These ePortfolio processes develop students' motivation to persevere, and gain an awareness of their own cognitive, affective, and conative capacities

during their co-construction of knowledge as members of an online learning community. During the initial stages in the development of their projects, the students begin to gradually share the links to their unfinished projects, helping provide guidance to their peers. They then begin to rely on one another for both knowledge (how to create each page) and feedback (how to improve on the final product) as they continue to populate each page of their capstone ePortfolio projects. Such experiences demonstrate the interconnectedness of concepts that underpin deep learning — pedagogy, technology, interaction, and reflection. The interaction among community members throughout the ePortfolio development process is an affirmation of how ePortfolio pedagogy depends on the ongoing guidance, proper modeling, and feedback interaction from and with the various members of an ePortfolio subculture in Internet learning spaces. During the ePortfolio development process, the students engage with each other and their projects, learn to persevere in their learning community, and strengthen themselves personally, academically, and professionally.

## About the Author

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# Modeling Pedagogy: Portfolios at the Intersections of Teaching and Learning

Authors: Brody C. Tate & Patrick M. Green
Review Editor: Orna Farrell

## Introduction

Situated in the Center for Experiential Learning, a teaching and learning hub on our campus, ePortfolios have been part of the curriculum, the teaching and learning strategies for faculty, and the high impact learning practices for students at Loyola University, Chicago for more than a decade. The Center for Experiential Learning (CEL) team at Loyola University Chicago decided to assemble a task force to review our learning portfolio (ePortfolio) platform and programs in order to improve upon the teaching and learning experiences of our students, faculty, and staff. The purpose of this internal review process was to assess our current platform and initiate conversations about ePortfolios and pedagogy. To facilitate a representative body, we engaged deans (or their delegates), faculty representatives from all colleges, academic technology partners, and campus partners to convene and dialogue about the priorities and utilization across programs. In the process, we wanted to engage in dialogue around the vision for the future of ePortfolio utilization. How do we harness these current learning opportunities provided by the ePortfolio program and leverage strong educational changes to pedagogy while tethering to the threefold purposes of student learning, teaching, and learning strategies, and the assessment of learning?

Through the lens of practitioner-scholarship (Salipante & Aram, 2003; Lytle, 2008; Ravitch, 2014), we interrogated our practice and process as we put theory to practice and reflected on our own experiences and program. We reviewed our mission, our practices, current theoretical approaches, the literature on ePortfolio pedagogy, and best practices. Through this process, we became aware of the opportunity to demonstrate a multidimensional approach to learning through ePortfolios, creating the vision for a hybrid model that situates ePortfolios at the intersection of the three elements associated with teaching and learning.

## CEL Process

We began our process by reviewing our current program and platform, understanding our "pain points," and drafting a vision of where we hope learning portfolios will take us in the future. We reflected on where we have been in the past decade, where we currently exist in this work, and where we want to be. This process was an enlightening experience of reflection for the CEL to turn introspectively toward our mission, our goals, and the learning portfolio program as a successful and powerful tool for engaging curricular theories and practice. Through this reflexive process, three emphases emerged for the ePortfolio program: demonstrating student learning, faculty innovation, and data assessment to support the claims of successful teaching and learning practices. This led to the

discovery that a task force of key stakeholders of staff and faculty would allow for significant collaboration and dialogue about proper practices and expectations with the curriculum and pedagogy of portfolio usage.

## Purpose of the Task Force

Instead of only reflecting on our departmental needs and experiences, we wanted to make sure we had representation from as many areas on campus as possible. Representation included offices, colleges, and educational technology areas that could speak to the successes and areas of improvement that we needed to hear, reflect on, and move forward with. We developed a vision and mission for portfolios in curriculum to guide our taskforce:

The learning portfolio program at Loyola University Chicago seeks to connect the high-impact practice of learning portfolios (ePortfolios) in the curriculum, in order to:

1. Enhance teaching and learning strategies for faculty,
2. Provide integrative learning experiences (signature experience) for students, and
3. Develop teaching and learning assessment opportunities at the course, program, and institutional levels. (Center for Experiential Learning, 2020)

The goal of embedding learning portfolios throughout the curriculum and in co-curricular experiences is to make learning holistic, tangible, and portable for students through an evidence-based demonstration of their learning experiences. Since technology had advanced with new features and platforms, the time had come to review our needs and aspirations while reviewing a technology platform that can best support these goals.

These guiding principles and objectives laid the foundation and provided a springboard for many conversations around ease of use, security, faculty training, assessment, purpose, supporting theory, classroom experiences, and campus support of learning portfolios. This provided a living framework for us to explore with colleagues representing a diverse array of areas from engineering to education, online learning to institutional effectiveness, from communication to nursing. The trajectory was set, the conversations were started, and the creativity and opportunity for change were all on the table as we set forth to create a task force for a new learning portfolio platform.

## Creating a Task Force

Engaging voices from a wide-spread representation across campus remained a top priority throughout the entire process. The CEL is located under the purview of the Office of the Provost and with support from our administration, we invited every dean from every college to represent or put forth a faculty representative to serve on the committee. We also invited key campus partners from areas of assessment, online learning, information technology services, faculty support, and relevant departments to join for nearly monthly meetings from January 2019 to October 2019. These collaborations were essential in engaging conversations around successes, struggles, fears, celebrations, programs, projects, support, and questions regarding portfolio uses on campus. These conversations led us to the creation of Model 1. These categories are natural areas that most faculty engage with whether they realize it or not. Our aim was to show that portfolios are a natural evolution in student learning and assessment for many different programs and courses. These stakeholders provided invaluable information, questions, ideas, and areas for improvement to guide the task force to select the best vendor for our program and the future of portfolios at Loyola University Chicago.

While there are some really strong portfolio programs, we wanted to create a task force with a diverse array of perspectives and levels of usage in order to bring as many thoughts to the process as possible. While this can be challenging and some resist the ideas and pedagogies, the education and collaboration draw out innovation in such a massive project. Ten years of history with portfolios, a need for updated technology and changing with the times, allowed these many voices to be heard,

represented, and shared throughout the group. We were transparent in our successes and our areas of struggle. We did not shy away from the truths and realities of portfolios and the campus environment surrounding them. Taskforce members interacted with the project team and potential vendors and were kept up-to-date throughout the entire process. This piece is essential in garnering understanding and support of not only the learning portfolio program and platform but also the pedagogy behind their uses. These meetings and conversations allowed for honest and candid dialogues about the needs and expectations of portfolios from multiple faculty and staff areas.

## Research

As we entered a review process, we wanted to make sure that we kept our vision within the boundaries of our work both in theory and in practice. After reviewing current utilization and previously submitted portfolios, pulling reports from our platform, reviewing analytics, and engaging with students, staff and faculty through in-person semester-to-semester meetings and online surveys, we aggregated important data demonstrating successes and gaps of our ePortfolio experiences. Building from ten years of program development, our extensive use of portfolios in over 54 programs across campus departments allowed for the breadth and depth of perspectives and examples of student learning to guide us toward our aspiration: a new, innovative program and platform to push us into the modern era of learning portfolio pedagogy. Since portfolios exist in a variety of educational settings, it was our hope to take that theory and the practice examples and look beyond the current utilization. Through the multifaceted lenses of students, faculty, and assessment, we reviewed the usage of portfolios and the gaps of portfolio usage on campus as demonstrated in the data collection section. Our approach to connect theory and practice was to draw from three frameworks: 1) high-impact learning practices, 3) integrative learning that fosters reflection on practice, and 2) practitioner-scholarship.

## High Impact Practices

"The phrase, high-impact practices, was appropriated to denote institutionally-structured student experiences inside or outside of the classroom that are associated with elevated performance across multiple engagement activities and desired outcomes, such as deep learning, persistence, and satisfaction with college" (Watson, Kuh, Rhodes, Light, & Chen, 2016, p. 65). While our ePortfolio program has been in use for about 10 years, we were able to witness the achievement of learning outcomes in courses with proper pedagogy and practice. Although some academic programs benefit from more guidance, ePortfolios in a variety of disciplines and functional areas of the institution have been implemented from Senior Dance Capstones to the Annual Undergraduate Research and Engagement Symposium. The ability to engage students' holistic experiences and provide them a mechanism to convey deep critical reflection and deep learning is the goal of ePortfolio pedagogy through technology. George Kuh advocated for portfolios becoming the 11th High Impact Practice. His notions on the power of portfolios supported and expanded the reasoning behind our program review:

"Herein lies the powerful potential of the ePortfolio when done well: It serves as a portable, expandable, and updateable vehicle for accumulating and presenting evidence of authentic student accomplishment including the curation of specific proficiencies and dispositions at given points in time." (Kuh, 2017, p. ix.)

In combination with other high impact practices such as academic internships, undergraduate research, service-learning, study abroad experiences, and other practices, ePortfolios can enhance and expand on course content, learning objectives, and student evidence of learning. The autonomous nature of students articulating their own learning in connection to in- and out-of-class experiences deepens

their learning, understanding, and reflections in a course or program. Students are asked to complete all kinds of different types of assignments and where do those assignments go? Into a folder or drive where hopefully they look back on them or save these artifacts for future potential uses. ePortfolios enhance these descriptions and demonstrations of learning in very intentional and critical ways.

## Reflective Practices and Integrative Learning

Reflection and scaffolded learning experiences are shown to enhance student experiences in many different ways. Lepp and Feirke (2017) claimed, "student self-reflection reportedly leads to more positive learning experiences, especially when students are given time and control to frame course learning outcomes by their own intentions and personal goals." These reflections and learning outcomes are student-driven, but they are also faculty-driven. If the faculty and course curriculum is set up to guide students through these elements of critical reflection, the learning outcomes often emerge from the reflection and curation of learning from students guided by their knowledgeable faculty. As faculty search for new and innovative ways to engage students and capture and assess learning experiences as well as have tangible evidence of student growth and course material mastery, ePortfolios offer a vehicle to accomplish these tasks.

Fernandes et. al (2019) suggested that scaling learning portfolios into multiple programs demonstrated immense improvements in courses, faculty interactions, and student success. GPAs improved and drop-fail-withdraw rates decreased overall even in a chemistry course. Engaging in technology and learning portfolios provides immense merit in meeting faculty teaching and learning practices with student success. "The result is that faculty mostly stick with what they know, lecture formats. Also, faculty do not typically visit each other's classroom or work to build a community of faculty innovators that would share new practices for integrating technology and engaging the 21st Century Learner" (Frenandes et. al, p. 34). Engaging the faculty is essential. "Our solution has been to engage early adopters and build on their work by creating opportunities for them to share their successes." (Burns & Thompson, 2019, p.43).

This aggregation of student learning and faculty teaching and learning strategies build the foundations of portfolio usage and deep critical reflection in student learning. To close the loop of information, theory, practice, expression, curation of learning, and demonstrated learning, the final piece as mentioned above is assessment. The measured, recorded, demonstrated learning, and understandings allow for faculty to track and measure learning while students adjust and respond to feedback and critique, all while setting a measure that can guide assessment and program review. Many of these elements exist or can easily be adapted for current curriculum and syllabi. Adding portfolios to the classroom can innovate, update, and alter the experience for both faculty and staff while benefiting large and small scale assessment to improve the student, faculty, and university experiences by engaging in high impact learning.

The research supporting theory and practice in learning portfolios made our own reflection and understanding see the three critical categories for supporting effective portfolio usage with long-term successful implementations in programs and faculty teaching and learning. The multimodal approach that learning portfolios provide supports different learning styles, teaching styles, and flexible and rich assessment opportunities when provided with the right tools. While the medium may not be the message, the medium as a technology must perform and function in a way that supports our goals, alleviates our current technological and pedagogical struggles, and advances our vision for better student learning, teaching and learning, and assessment.

## Practitioner-Scholar Approach

We approached this review through the lens of practitioner-scholarship (Salipante & Aram, 2003; Lytle, 2008; Ravitch, 2014), in which theory and practice inform each other. Salipante and Aram (2003) explain that practitioner-scholar research connects the context of practice—which includes an intimate understanding of issues, problems, and settings–with the established theory and methods (research-based implementation). Ravitch (2014) defines practitioner research as integrating theory, research, and practice while fostering critical reflection on the implementation of practice. An inquiry stance to practice is essential to the practitioner-scholar approach, in which we interrogated our own practice through methodological investigation, positioning reflection as a form of inquiry, and questioning the contexts of our learning portfolio work (Lytle, 2008). The nature of this lens and approach allow our exploration and discovery to both guide and adapt our practices as new information emerges, new experiences are observed, and praxis guided by research leads to resolving the issues or problems we are attempting to alleviate. In our case, this was the need for technology to support our pedagogy and practices with ePortfolios.

The merging of these three notions–high impact practices, reflective and integrative learning, and practitioner-scholar approach–support our practice, our pedagogical approach, and our program review, leading to our deeper understanding of the intersection of student learning, assessment of learning, and faculty teaching and learning. This intersection is born from our scholarly approach and our use of portfolios in a myriad of different ways on campus (practice). The hybrid approach allows us to straddle the divide of theory to practice, applying the successes and needs for improvement and adapting to, as well as re-imagining, new approaches to learning through ePortfolios.

## Data Collection

In December of 2018, the CEL began compiling data from multiple sources: current platform's support team, LOCUS Data, Office of the Registrar, Taskstream reporting tools, and historical/interaction data from the CEL. There is no one source that can track all uses of portfolios due to the fact that the software is open to the entire LUC Community. The data represented was also representative of one academic year (2018-2019), thus it is conservative and time-bound. Programs and portfolios can span upwards of the entirety of a student's time here at Loyola University Chicago from undergraduate to graduate level.

| Data Collected June 2018-June 2019 |
|---|
| 71 Active Assessment Programs |
| 3,600+ Authentic submissions to assignments |
| 3,077 Individual student learning portfolios created |
| 53 Concurrent programs (individual courses, capstones, study abroad experiences, and graduate programs) |
| 6,300 Active users that academic year |

Table 1. Data Collected June 2018-June 2019

Through our own internal reflection and analysis, we reaffirmed the robust use and potential for furthering learning portfolio usage on campus by creating and implementing a task force group to review multiple platforms and bring the currently available technologies to Loyola University Chicago.

## Discovery

By reviewing the CEL theories, practices, and historical pedagogies, we could share our knowledge and practice of ePortfolios and integrative learning. There are multiple misconceptions about portfolios and ePortfolios that we spent much time training and informing others of. This education for others drove us on our path to discovering a synthesized model incorporating our unique goals that lend to the three major focus areas of our task force displayed in Figure 1: Student learning, faculty teaching and learning, and assessment of learning. These three pillars are the driving focus of the

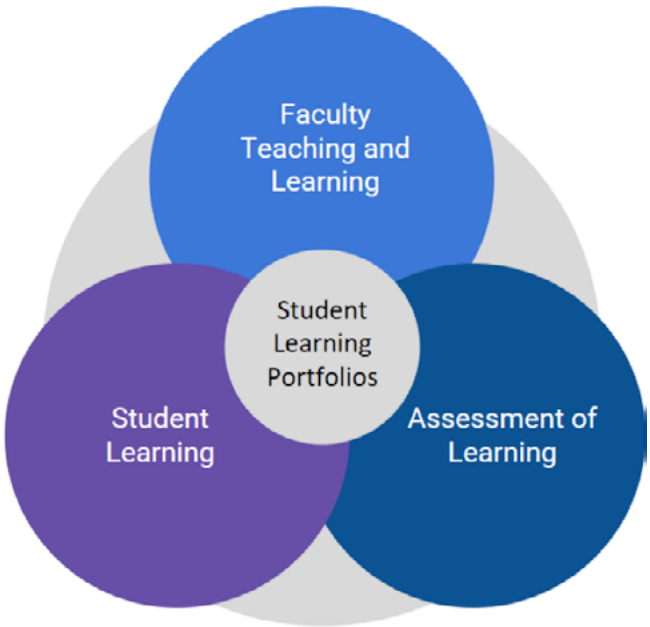


Figure 1: Model of Student Learning Portfolio.

learning portfolio program and the practices we guide faculty to utilize. By speaking with students, faculty, and staff on campus, these three categories are common goals of nearly every program on campus even in co-curricular experiences. When engaging in our attempt to create and explain the pedagogies behind portfolios, we realized that the natural fit and overlap of the three areas that can easily combine strong teaching and learning theory with strong teaching and learning practices. Taking student experiences both in and out of the classroom and merging them with course concepts, identities, backgrounds, and multimodal approaches to student expression demonstrate why George Kuh supported learning portfolios as the 11th High Impact Practice:

The ePortfolio process is conceptually and theoretically sound, drawing on complementary strands of research from the learning sciences and allied areas. Equally impressive and persuasive is the empirical case the authors make for declaring the ePortfolio to be a HIP [High Impact Practice]" (Kuh, 2017, p. viii).

## Exploring Available Technologies

Focusing on a vision and gathering a task force led to an amalgamation of uses, resources, needs, and wants from the task force members regarding our expectations on a new platform technology. Based on the aggregated information, a set of criteria was used to guide the search for a new platform that would help facilitate best practices in teaching and learning, expanding opportunities for:

- Tracking learning outcomes at course and program levels
- Administrative portfolio support
- LMS integration
- Innovate student learning
- Increase faculty teaching and learning tools through academic technology
- Increase assessment of learning opportunities
- Increase opportunities to engage with external reviewers (site supervisors and community partners
- Remove current technical difficulties and frustrations for students, staff, faculty, and administrators

There had already been some informal demonstrations of a few technologies, and with the support of our Information Technology Services (ITS) representatives, we sent requests for information (RFI) to ten vendors. Of those ten, four were given requests for proposal (RFP). During both of these processes, task force members could volunteer to score the RFI and RFP, allowing their assessments of the platforms and feedback to be presented when needed. We then invited vendors to present demos for staff, students, and faculty across campus to allow them to engage in feedback and see examples from the platforms themselves.

Interacting with the platforms as well as the vendors opened the floor for a significant number of questions, concerns, logistics, and clarifications to be laid out and dissected. The presentations allowed for strong observations and understanding of the product as well as how we could integrate this platform into our campus and pedagogies. We wanted to make sure that as we narrowed our search, we held our three categories at its forefront. The technologies and elements must meet our vision

and requirements for student learning and faculty teaching and learning as well as assessment of learning. We sorted through, collectively, what we wanted and needed from the platform, vendors, and the work that would be created in making this decision. While there are plenty of options, we wanted to make sure that the CEL would be moving forward with a technology that would lead us into the future and forefront of portfolios in the classroom. Student learning and utility was at the top of our priority list in order to represent best practices and uses.

## Presenting Findings

Through the exploration of the task force, engaging with stakeholders, and a decade's worth of anecdotal evidence, we discovered that centering the three categories of the model for student learning portfolios helped clarify our aspirations for growing the learning portfolio program, educating others campus-wide and even educating up. The support, dialogues, and framework of this learner-centered model as well as the collaborative efforts of those on the task force allowed for in-depth review and interrogation of the important features we were looking for in expanding the learning portfolio technologies. As we shared the data collected, the requirements and aspirations of the task force, and the supporting information from vendor demonstrations, the administrative and executive bodies that we presented to were not only supportive but also excited for the advancement of new technology. Supporting students, faculty, and staff as well as utilization became a common point of conversation that was easy to address due to the extensive work and forethought of the task force and its members. Bringing key stakeholders and educating up are essential to presenting findings from the task force and garnering support along the way. Keeping key folks in the information loop and clarifying (often educating) germane information allowed us to seemingly move forward with a massive undertaking. There is absolutely no doubt that without this very important step, we would not have been as successful in this process. We all know the amount of red-tape and processes that must be gone through when implementing university-wide programming, and we have experienced our fair share.

## Project Implementation

This review process allowed us to articulate this model while seeking to implement these changes through the use of learning portfolios. We refer to "ePortfolios" as learning portfolios. We draw a hard line that our practices are for the learning and assessment of learning, not just an electronic portfolio to store information as a repository. Embedded into these educational experiences, there should be a deep critical reflection, curation of learning, autonomous self-expression, and a demonstration of connecting course concepts. From our reflections, dialogues, and analysis of pedagogy, we created a model to highlight the categories that will drive and focus us throughout the process of onboarding a new technology platform and further innovation by utilizing learning portfolios as a dynamic and aspirational education tool.

Once our contract is signed, we will move into the next steps of workshopping data migrations, faculty and student support, then transitioning into a new program. These steps involve a project team, a very carefully thought out communication plan, premeditated planning, and constant communication and transparency. While some institutions are very different and processes change, there are large portions of this article that you can take to your own areas, apply similar approaches, and achieve success in varied ways:

1. Review your vision and intentions
2. Collaborate with stakeholders to gather needs, aspirations, and perspectives on portfolio usage in focus groups or a task force
3. Research technologies that will best support your vision
4. Gather and present those findings to folks that you need to garner support from
5. Develop a well-thought-out, strategic communication plan for all stakeholders

These steps may seem rudimentary but happen to be very useful in moving a large-scale program or even a smaller implementation. These key features of navigating the process allow for the focus of the product to circle back to the categories of Model 1: Student Learning, Faculty Teaching and Learning, and Assessment. One area of improvement we would have liked to do better in is student engagement and feedback. While we offered, invited, and recruited students throughout the process, the numbers were fewer than we would have liked for general populations due to scheduling, time, and frequency of demonstrations. The students who did attend provided invaluable feedback and information to guide their perspectives. We wish we could have had a stronger student representation.

## Conclusion and Reflection

Witnessing this process from the beginning has proven that hard work, strong transparency in collaboration, and focusing on a vision can lead to amazing progress and significant results. The collaborative efforts of all those involved have truly produced an amazing experience of shared ideas, pedagogy, and vision for teaching and learning. Our work in the CEL is to enhance teaching and learning for both faculty, student, and staff in meaningful ways. This process garnered tremendous support and innovation, pushing our program into the future and on to amazing successes. Taking a step back to reflect and understand our needs and the needs of those using portfolios opened the door to leverage, change, and seek new opportunities with educational technological advancement. Technology often outpaces educational structures, and we must adapt to the changing tides. We also must adapt in helpful, constructive ways that guide the next generation of learners and leaders into the forefront of knowledge, innovation, and skills that we hope we are planting the seeds for. Merging all the theories to back up our well-founded examples from students and faculty in practice lend to a very exciting opportunity for us to advance our technology and in turn, advance our practice.

## About the Authors

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# Electronic Portfolios for Learning and Teaching in Veterinary Education

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## Abstract

Recently, the use of ePortfolios has tremendously increased in the higher education sector; however, the use of ePortfolios in veterinary education is still in its infancy. As a sophisticated means of e-learning, ePortfolios can be utilized in veterinary education in many ways such as documenting, tracking, and assessing student skills/clinical competency; integrating new digital technologies such as digital badges, digital learning analytics, and gamification; and promoting reflective learning, feedback culture, and future employability. The skills and capabilities required for competent veterinary professionals need time to develop so that an ePortfolio can provide flexible options for continued skill development and lifelong learning. This article aims to summarize the basic concepts of ePortfolios, benefits and applications of using ePortfolios in the education sector, commonly available ePortfolio platforms, and the existing knowledge and prospects of using ePortfolios in veterinary education. It is envisaged that veterinary institutes will embrace, integrate, and promote ePortfolios to produce highly competent, professional veterinary graduates. Future research is required to explore the maximum potential of ePortfolios for effective teaching and learning in veterinary education.

**Keywords:** ePortfolios, veterinary teaching, digital technology, reflective learning, professional education

## Introduction

Veterinary education has changed considerably over the last two decades due to (i) introduction of tracking streams (e.g., specialization in horse medicine), (ii) establishment of new veterinary schools whose students gain practical experience exclusively on placements, and (iii) participation of students from diverse social and cultural backgrounds as well as those who have significant educational and professional experiences prior to commencing veterinary school. These changes lead to very diverse graduates, whose experiences differ quite significantly from one another. Hence, new approaches are required to capture and showcase these various skills that students acquire during and beyond their education in a veterinary school. In addition, the rapid development of digital information and communication technologies is already influencing veterinary teaching, education and the profession (Jabbar, Gasser, &Lodge, 2016; Saeed & Jabbar 2018; Short, 2002). As digital technologies continue to play a part in our daily and social lives, the current trends in education demand that our students are digitally literate and fluent. Designing learning and teaching activities by integrating digital information and communication technology-supported (mainly web-based) portfolios, commonly known as ePortfolios, digital portfolios, webfolios, or efolios, can develop these lifelong and life-wide digital capabilities (Hallam et al., 2008).

Modern philosophy has transformed medical/veterinary education from predominantly summative-driven assessment methods to an emphasis on competency-based practices that promote reflective learning and foster personal and professional growth (Chertoff, 2015). Self-directed (self-initiative with or without others' help) and reflective learning (i.e., learning that allows students to look back and analyze their learning experience, which helps to develop critical thinking and improve future performance) are essential for effective integration of knowledge, development of high competence, continuing professional development (CPD), and lifelong learning in veterinary students and practitioners (Adams, Nestel, & Wolf, 2006).

Learning tools such as logbooks and portfolios have been implemented in programs to encourage veterinary students to be more self-regulated (Dale, Pierce, & May, 2013). Portfolios may contain not only features of a logbook with a structured checklist, but also a broader collection of evidence accompanied by a reflective narrative that shows the learning journey, acquisition of knowledge, practical skills, and professional development of an individual over time (Greaves & Gupta, 2003; Mossop & Senior, 2008; Thomas, 1998).

To cope with the changing dynamics of veterinary education, to provide flexible study options and to fulfill the needs of the competent veterinary practice, electronic portfolios (ePortfolios) can offer a reliable solution to reflective learning and CPD among veterinary professionals. The use of ePortfolios has significantly increased over the past few years in learning and teaching in various disciplines, including music (Rowley & Dunbar-Hall, 2012), medical sciences (Polly et al. 2015; Avila, Sostmann, Breckwoldt, & Peters, 2016), nursing (Green, Wyllie, & Jackson, 2014), Information Technology (IT) (McKenzie, Coldwell-Neilson & Palmer, 2015), and engineering (Alam, Chowdhury, Kootsookos, & Hadgraft, 2015). However, the use of ePortfolios in veterinary education is still in its infancy. ePortfolios in veterinary education could offer an opportunity to capture students' skills as they progress and build over the journey of "becoming" veterinarians, and then showcase graduate attributes, key and transformative knowledge, skills, and experiences prior to, during, and after their formal veterinary education. In fact, the veterinary healthcare system is currently experiencing rapid change, and practitioners are required to be self-aware, self-directed, and resource-effective individuals who are technologically savvy as they will likely work with large volumes of data and complex animal health delivery systems (Bugeza et al., 2017; Saeed & Jabbar, 2018; Short, 2002).

A traditional classroom-based curriculum which relies on logbooks and paper-based portfolios may not be effective for preparing veterinary graduates to function expertly with a complex delivery system. In a more global sense, medical and veterinary institutes have recognized the urgent need to integrate digital technologies into teaching and learning activities to meet the enormous needs of the changing education dynamics (Avila et al., 2016; Mossop & Senior, 2008; Short, 2002). This increased focus on informatics and technology has resulted in an emerging trend of archiving, showcasing student accomplishments in the form of curated digital and electronic collections as opposed to traditional paper-based logbooks and portfolios (Avila et al., 2016; Mossop & Senior, 2008). These digital/electronic portfolios not only highlight artifacts portraying academic accomplishments, but also allow students to self-reflect on the content they have developed and created through assessment and learning during placements. ePortfolios have their origins in this shift from paper-based collection to curation in the digital realm in the mid-1990s as portfolios went beyond disciplinary evidence of teaching toward a learning and learner-centered pedagogy. This shift in educational practices occurred alongside advances in educational technologies that opened capabilities and opportunities for reflective and collaborative teaching and learning. As Reynolds and Patton (2014) state, "ePortfolios are digital representations

of students' work and accomplishments along with their reflections on learning. The ePortfolio has the potential to enhance student learning through the process of collect, select, reflect, and share (p. 441)."

This article aims to present: (i) the basic concepts of ePortfolios, (ii) the benefits and applications of commonly available ePortfolio platforms, (iii) existing knowledge on the use of ePortfolios in veterinary education, and (iv) potential opportunities for using ePortfolios in veterinary education.

## Literature Search

The authors searched all the databases in the ISI Web of Knowledge from 1970 to 2017 (accessed on December 26, 2017) using multiple search terms (electronic portfolio, ePortfolio e-Portfolio, efolio, e-folio, portfolio, Mahara, PebblePad, Digication, Taskstream, Blackboard, Chalk&Wire, GoogleDocs, LiveText, Weebly, Wix, WordPress, E*Value, Myprogress, OR One45), finding a total of 94,308 articles. The word veterinary was applied as a filter, and 28 articles were shortlisted from the main search. The same terms were applied to search articles on PubMed and Google Scholar. Additional relevant articles were screened from the references cited in the articles found in the primary search. The six articles that were identified to be directly related to ePortfolios in veterinary education were finally included in this review (Gopinath et al., 2012; Mills, Butcher, & Tilbrook, 2008; Mossop, 2010; Mossop & Senior, 2008; Rush et al., 2011; Warman, Laws, Crowther, & Baillie, 2014).

## Investigating ePortfolio Use in Veterinary Schools

In a recent survey undertaken by the authors, 46 veterinary schools across the USA, the United Kingdom (UK), Australia, Canada, and New Zealand were contacted about the use of ePortfolios in their veterinary curricula; of these, only nine responded. Of these nine veterinary schools, two used PebblePad and another two used E*Value, while the remaining five had their own in-house ePortfolio platforms.

## Portfolios and ePortfolios

A portfolio is defined as an important collection of curated evidence that captures a learner's skills, knowledge, attitudes, and achievements to demonstrate progress and mastery guided by standards and includes evidence of student self-reflection (Mossop & Senior, 2008; Paulson, 1991). When viewed as a critical reflective digital document, a portfolio offers features that promote self-directed learning, the acquisition of knowledge, evidence of transformative learning, practical skills, career development and planning, and professional development – the key attributes required in veterinary education to produce competent veterinary professionals (Greaves & Gupta, 2003; Hallam et al., 2008; Mossop & Senior, 2008).

An ePortfolio can be defined as an organized compilation of artifacts (such as documents, images, video files, podcasts, audio files, PowerPoint presentations, spreadsheets and databases, case studies, resumes, etc.) that demonstrates knowledge, skills, values, or achievements and that articulates the relevance, credibility, and meaning of the artifacts being organized and presented (Cooper & Love, 2007). Recently, another study re-defined ePortfolios as a personal digital record that supports formal, informal and non-formal learning and contains evidence about one's accomplishments in the form of artifacts and reflection on learning, which can be provided to whomever the owner has chosen to grant permission (Balaban & Bubas, 2010). ePortfolios continue to become more commonplace in higher education teaching, learning, and assessment because of the opportunities students can have to demonstrate cross-cutting competencies (Everheart, Bushway & Schejbal, 2016) and graduate and professional attributes developed over time. Using a program-designed ePortfolio, students have the opportunity to discover and explore their roles as both learners and developing professionals throughout their learning journeys. This time on a task allows for iterative collections of evidence and reflection. The selection of this evidence demonstrates standards at key

points in time to make connections between formal and informal learning, and integrate acquired skills, experiences, and knowledge.

In the veterinary context, an ePortfolio serves two purposes, as an inward-facing digital store or repository for visual digital and auditory artifacts to aid in personal learning and development and as an outward-facing showcase for professional development. This digital store follows the trajectory of a student's career, and examples from its contents can be selected to curate and exhibit a display of various collections of artifacts to multiple audiences that reflect professional competencies, skills, and learning developed over time.

## Benefits of Using ePortfolios

Buzzetto-More (2010) reviewed the benefits of using ePortfolios and identified that the most common benefits for students were (i) an authentic (real-life learning); meaningful and lifelong learning experience; (ii) a support system for a guided inquiry, which involves initiation, selection, exploration, formulation, collection, presentation, and assessment; (iii) autodidactism or self-learning, where students take responsibility for their education or learning; and (iv) deep reflective learning.

According to the international ePortConsortium project (ePort Consortium 2003), ePortfolios can benefit a range of stakeholders by (i) allowing both students and teachers to evaluate student growth and progression towards learning goals; (ii) encouraging students to reflect on their own cognitive growth and meta-cognitive processes fostering self-awareness, self-learning, and deep-learning; (iii) offering a flexible assessment measure that provides students more control and more opportunities to succeed; and (iv) providing a platform which students can use to showcase their learning/skills when looking for internships, scholarships, and employment. Table 1 summarizes the findings from various studies highlighting the benefits of ePortfolios in tertiary education. (See next page.)

## Types of ePortfolios

Although no standard classification of ePortfolios is available because of their contextual nature, ePortfolios can be categorized as developmental/learning, presentational/showcasing and assessment ePortfolios (Mason, Pegler, & Weller, 2004). A discussion of each type follows:

a. The developmental ePortfolio focuses on the learning process and work in progress, demonstrating the advancement and self-assessment of students' skills over a period. This type of ePortfolio develops what Chen (2014) refers to as folio thinking as pedagogy supports learner-centered learning through the teaching of iterative critical reflection (Alam et al., 2015; Buzzetto-More, 2010). A developmental ePortfolio, for example, sees the student curating selected artifacts such as self-assessment reflection, formative feedback examples, and critical reflections. This type of portfolio also provides a space beyond the classroom for communication between students and academic staff/clinicians/peers.

b. The showcase ePortfolio focuses on the product of the collection of artifacts and the narrative developed to illustrate students' skills and achievements in a range of areas to an audience often beyond the university. The audience for this type of ePortfolio includes potential employers, professional credentialing bodies, and career advisors. An example of a showcase ePortfolio sees students curate a space that highlights their personal and professional achievements for graduate programs, scholarships, and potential employers in a polished and formal style.

c. The assessment ePortfolio allows for the curation of artifacts as evidence of student learning that demonstrates the outcomes being assessed. A student's competency and achievements can be evaluated against standardized criteria and can be used for ongoing or end-of-course assessment of student performance (Alam et al., 2015).

Today, most ePortfolios are a blend of the basic three types, encompassing features of developmental, assessment, and showcase ePortfolios (Buzzetto-More, 2010).

| Feature | Details | References |
|---|---|---|
| Artifact range | Many kinds of artifacts, such as pictures, graphics, and audio and video recordings can be used. | (Abrami & Barrett, 2005, Heath, 2005) |
| Assessment | Students become engaged in the evaluation, assessment and peer-review process, and can use that assessment to constantly improve their learning. | (Mossop & Senior, 2008) |
| Economical | Inexpensive, especially to reproduce. | (Matar, 2015) |
| Evidence of learning | Rich picture of student learning and competencies, and authentic learning provided. | (Meyer & Latham, 2008) |
| Maintenance | Easy to maintain, edit and update. | (Mossop & Senior, 2008) |
| Multiple views | Multiple ePortfolios can be created for different purposes and audiences. | (Matar, 2015) |
| Organization | Easily organizable in many complex ways because they are electronic. | (Meyer & Latham, 2008) |
| Portability and accessibility | Portable and easy to share or transport, and can be accessed from different computers. | (Matar, 2015) |
| Privacy | Can include a privacy feature to protect the student work. | (Butler, 2010) |
| Professional development | Students learn to manage their own professional development, which contributes to lifelong learning. | (Adams & Kurtz, 2006) |
| Psychological benefits | Students have a sense of pride and personal accomplishment. | (Young, 2002) |
| Quick feedback | Students can receive timely feedback and exchange of ideas. | (Lamont, 2007) |
| Skill development | The user learns multimedia technology skills while creating an ePortfolio. | (Mossop, 2010) |
| Standardization | Can help to standardize curriculum across different institutions as well as regions. | (Mossop & Senior, 2008) |
| Storage | Easy and efficient to store unlike paper portfolios. | (Matar, 2015) |

Table 1. Potential Benefits of Using ePortfolios in Veterinary Education

## Available Platforms for Creating ePortfolios

A common feature among all the ePortfolio platforms is that they all are accessed through a web browser and use digital dashboards for adding or monitoring their contents such as text, images, multimedia, blog entries, and hyperlinks to other digital sites. Some systems require on-site servers and storage (self-hosting), whereas others are hosted by the provider. The selection or usefulness of an ePortfolio product could vary depending on the educational or learning requirements determined by the end-user or the institutional needs. Table 2 provides a list of selected platforms and tools currently being used to create ePortfolios in various disciplines around the world. (See next page.)

## The Use of ePortfolios in Veterinary Education

In the past, a slow tendency to adopt new developments in e-learning and the reluctance to change traditional teaching methods were major issues in veterinary education (Short, 2002). This is arguably the reason that portfolios and ePortfolios have been used and studied more widely in medical education than in veterinary education (Chertoff et al., 2016). However, in recent years, ePortfolios have been introduced in some veterinary schools. Since an ePortfolio provides a concept of personalized, technology-enhanced learning in modern education, it

| ePortfolio | Description |
|---|---|
| Mahara [Link] | A popular open-source system which is a combination of an ePortfolio and a social networking system. |
| PebblePad [Link] | Provides personal learning space and is one of the most popular systems in Australia and the UK. |
| Taskstream [Link] | Enables users to create ePortfolios for assessment, showcasing and accreditation purposes. |
| Digication [Link] | Multipurpose ePortfolio for different audiences. |
| Blackboard's ePortfolio [Link] | Provides specific tools, different platforms and environments to support various pedagogical needs. |
| Chalk&Wire [Link] | A multipurpose system students can use to build ePortfolios featuring completed assignments and their reflections, all integrated with an assessment system. |
| GoogleDocs [Link] | A freely available web tool from Google for creating and publishing an ePortfolio. |
| LiveText [Link] | An assessment system purposefully designed to capture moments in the learning process. |
| Weebly [Link] | Provides hundreds of free templates for building an ePortfolio. |
| Wix [Link] | Provides hundreds of free templates for creating an ePortfolio (http://www.wix.com/website/templates/html/portfolio-cv/2). |
| WordPress [Link] | One of the largest self-hosted blogging tools in the world. |
| E*Value [Link] | An ePortfolio designed for veterinary and medical education used by many veterinary schools in North America. |
| Myprogress [Link] | Myprogress makes it easy to provide better feedback and assessments to veterinary students even when they are on external placements. |
| One45 [Link] | This system is specially designed for needs of medical and veterinary education and can be used to manage, schedule, assess, and track curriculum, skills. |

Table 2. Some Selected Platforms Used for Creating ePortfolios Listed from Most Frequently Used to Least

has great potential for enhancing learning and teaching. It is anticipated that the use of ePortfolios in veterinary education will increase in the future. The potential use of the ePortfolio can be leveraged as both the product and the process of learning, teaching and assessment in veterinary education. As a product, an ePortfolio provides a personal space where learners can present evidence of their learning activities, experiences, and achievements in the form of digital artifacts. As a process, an ePortfolio allows learners to evaluate the process of their learning through iterative reflection to understand the connections inherent in the process of studying veterinary medicine (Barker, 2006; Hallam & Creagh, 2010).

The three most commonly used ePortfolio platforms in veterinary education include E*Value, MyProgress, and One45. E*Value is an ePortfolio platform designed for veterinary and medical education used by several veterinary schools in North America. It could be used for various purposes in veterinary education such as viewing performance and compliance reports, approving hours logged for trainees supervised, tracking time and generating statistic reports, and signing-off on trainee case logs. Myprogress makes it easy to provide better feedback and assessments to veterinary students

even when they are on placements. The One45 system is usually used to manage, schedule, assess, and track curriculum and skills. These ePortfolios could be further explored by veterinary students/educators through the weblinks provided in Table 2.

The following sections show how ePortfolios could enhance learning and teaching in veterinary education.

## Skill Assessment and Clinical Competency

One of the main areas of use for ePortfolios is recording clinical competencies and assessing skills of veterinary graduates. For example, the competencies in Day One Skills (D1S) by the Royal College of Veterinary Surgeons (RCVS, 2011) and the American Veterinary and Medical Association (AVMA, 2017) present the backbone of veterinary curricula in various countries. The list of D1S or AVMA competencies indicates the core competencies required for a new veterinary graduate and is the minimum standard required for ensuring registration with these accreditation bodies and safe veterinary practice. To achieve competence in these skills, veterinary students experience and learn in a wide range of formats, situations, and locations over several years. For example, in the UK, every veterinary student must undertake 38 weeks of extramural studies (EMS) during their course, including 12 weeks of pre-clinical and 26 weeks of clinical placements (Mossop & Senior, 2008; RCVS, 2011). Similarly, veterinary students at the University of Melbourne, Australia, are required to undertake 25 weeks of scheduled clinical rotations internally within the University Veterinary Hospital as well as in external placements and 19 weeks of extramural elective placements. Recording students' skills and assessing their learning and competency in these situations and locations is a big challenge for teaching staff.

Paper-based logbooks and portfolios are one of the traditional methods of recording students' skills. However, many students remain unclear about the range and level of competency required of them when they graduate (Rösch et al., 2014; RVC, 2011). In recent years, the ePortfolio has been recognized as an emergent technology, replacing paper-based portfolios in many educational institutes (Denton & Wicks, 2013) due to the advantages they offer (Table 1). Many ePortfolio platforms provide in-built, sophisticated statistical and evaluation tools; hence, they can be used for both formative and summative assessments in veterinary education (Egan, 2012; Mossop & Senior, 2008). Furthermore, they offer various means to record and assess students' competencies not only on campus, but also in practice settings outside the university.

An example of recording students' competency using an ePortfolio is the web-based application at Kansas State University that allows recording of technical skills of their students during clinical rotations throughout the final year of the veterinary course (Rush et al., 2011). One of the main advantages of this application is that the users can categorize, record and track the procedures by disciplines (e.g. anesthesia, imaging, diagnostic medicine, pathology) and by animal species (e.g. small animal, dairy, equine). This application enables students to record information such as patient details, the procedure performed, supervisor details, and a self-assessment of their performance. Teaching staff can electronically evaluate the procedures by providing qualitative and quantitative feedback. The ePortfolio application ensures that each student has an opportunity to perform the technical procedures and receive formative feedback throughout the clinical year.

Similarly, another ePortfolio application was developed at The University of Sydney to record, monitor, and evaluate veterinary science students' surgical experience (Gopinath et al., 2012). The main objective of this application was to provide students with optimal learning opportunities so that they could achieve Small-animal Soft-tissue Surgical Day One competencies. The majority (75%) of the students found this ePortfolio application a valuable tool for keeping a record of the procedures they performed and for receiving

adequate opportunity to develop their skills and confidence while they were on placements.

Using ePortfolios in veterinary education can help not only teachers to effectively assess students' competencies but also enables students to keep a record of their skills, identify their strengths and weaknesses, and pinpoint areas where they need improvement, all of which facilitates self-centered and self-regulated learning.

## Reflective Learning

Reflective learning is a way of learning that allows students to look back and consider an experience critically, analytically, and non-subjectively. It forms the basis of experiential learning and is expected of all professionals, including veterinarians (Adams & Kurtz, 2006). Reflective learning is crucial in problem-solving, decision making, lifelong learning, effective communication with peers and clients as well as in producing competent and professional veterinary graduates (Adams & Kurtz, 2006; Mossop & Senior, 2008).

The creation and curation of an ePortfolio can make the learning process more visible to students themselves as it provides them with an opportunity to examine and reflect on their learning over time and in different settings. Studies have demonstrated that critical reflection can be cultivated in a veterinary curriculum, and it should be assessed by reliable means (Adams & Kurtz, 2006). The integrated use of ePortfolios is a reliable and effective approach for assessing and measuring reflective learning, which is often very difficult to evaluate with traditional assessment methods (David et al., 2001). For example, ePortfolios can capture and represent evidence of student development over time, unlike traditional methods, which often just represent a snapshot at a single time-point. Similarly, ePortfolios could enable veterinary students to understand their current practice through this reflection in collecting and selecting evidence and through the curation of artifacts as new evidence that demonstrates competencies and attributes. Reflection is developed as a skill over time and requires scaffolding and modelling. The ePortfolio could enable veterinary students to see and share their experiences and knowledge with others, which could be highly challenging with traditional pedagogical approaches (Greaves & Gupta, 2003).

Recently, two veterinary schools in the UK introduced the use of portfolios in the first year of their curriculum to monitor the reflective learning of their graduates (Mossop & Senior, 2008). Both ePortfolios were used for regular formative assessments, although one of them was also used for annual summative assessment where the final year students were required to provide evidence of the successful acquisition of a learning objective, e.g. communication skills in a viva exam by displaying the artifacts in the form of pieces of reflective writing they had curated throughout the year. Similarly, students were asked to provide a brief personal reflection on the clinical placement experience. Results revealed that veterinary students understood the need for reflective learning and practice, and the majority of them found the ePortfolio a useful tool for recording their learning experiences. Subsequently, the Nottingham veterinary school trialed three commercially available ePortfolio systems in a pilot study, analyzing the usefulness of these systems and finally adopting PebblePad for their students and staff (Mossop, 2010). Results of surveys conducted before and after implementing this platform revealed that only about one-third of the students who responded ($n=55$) required more feedback from their tutors to improve the technical understanding of the ePortfolio, something which could easily be addressed. However, more than two-thirds of students recognized the purpose of an ePortfolio and agreed that its use helped them in (i) learning to reflect, (ii) seeing where they could improve, and (iii) highlighting their achievements.

## Showcasing for Employers

With increasing competition for jobs, one of the main challenges faced by recent veterinary graduates is employability. For instance, a considerable decrease in full-time employment from 90% to 81% has been observed for veterinary graduates in Australia between 2016 and 2017 (QILT, 2018). Thus, it is important for veterinary institutions to equip graduates not only with clinical knowledge but also with transferable skills relevant for future employment. The ePortfolio not only promotes cognitive and reflective learning but it also provides a platform on which students can build and showcase their career development and achievements (Simatele, 2015).

Recently, the veterinary school at Murdoch University, Australia. trialed a commercially available ePortfolio, which allowed students to store items from their online units as portfolio artifacts (Mills, Butcher, & Tilbrook, 2008). Senior veterinary students were asked to create ePortfolios showcasing evidence of their learning, skills, and abilities against the selection criteria defined by five veterinary employers. Due to several technical difficulties, only one student was able to complete the task. However, this student's experience was extremely positive; he/she reported that creating an ePortfolio was very helpful in learning and reflecting on personal achievements, boosting confidence, and, therefore, creating a sense of accomplishment.

In short, ePortfolios offer an important opportunity to prepare veterinary graduates for global employability in the modern age of high competition and digital technology. A showcase ePortfolio, as a representative summary of curated pieces of evidence, can promote veterinary graduate attributes during their job search (Jwaifell, 2013).

## Timely Feedback

Constructive feedback greatly influences the learning process as students receive information on how they can improve their performance, whether they are successful, and if they are on track to meet expectations (Warman, et al., 2014). Although feedback has been widely recognized as an essential attribute in education and its value in clinical settings is undeniable, student satisfaction with the feedback process in veterinary education remains suboptimal, potentially due to time constraints of teaching and clinical staff as well as the lack of skills and platforms required for providing meaningful feedback online (Cantillon & Sargeant, 2008; Warman et al., 2014). Not receiving timely and quality feedback on cases studied and techniques performed is a big challenge for veterinary students, especially when they are on extramural placements. Moreover, providing rapid and in-depth feedback to a large number of students using traditional approaches is a challenge for teaching staff (Jabbar et al., 2016). Paper-based logbooks and portfolios showing student-patient encounters have traditionally been used for faculty members' and residents' feedback in many veterinary schools (Dale et al., 2013). However, the manual process of uploading information is cumbersome for students (Spickard & Denny, 2006). Thus, veterinary students need an alternative and rapid means of receiving useful feedback on their clinical encounters while they are on clinical rotations and extramural placements.

The blogging and gateway tools of ePortfolio platforms allow tutors to monitor student progress and provide immediate online feedback (written/audio/video) to students (Buzzetto-More & Sweat-Guy, 2007), even if they are at a distance (such as on an externship), thereby promoting active learning of veterinary students. The North American Veterinary Medical Education Consortium (NAVMEC, 2011) has also recommended promoting the use of web-based discussion forums to facilitate sharing of best practices in veterinary education, and the use of ePortfolios presents a logical approach in this context.

In summary, ePortfolios can be used in veterinary education to promote a direct, in-depth and bidirectional feedback culture for encouraging critical thinking and self-reflection, and fostering high quality learning among

veterinary graduates, therefore enabling them to become self-regulated practitioners. Useful formative feedback through ePortfolios in veterinary teaching can significantly help students improve their learning and perform better in summative assessment, thus enhancing the overall learning (Lynch, McNamara, & Seery, 2012; Ricketts & Wilks, 2002).

## ePortfolio – A Platform for Integrating Learning and Teaching Digital Technologies

The use of ePortfolios can offer a sophisticated platform for integrating innovative digital technologies such as digital badges and learning analytics in the learning and teaching of veterinary education.

A digital badge is a symbolic and visual presentation of an accomplishment, competency, interest, or experience, which is available online and supported by metadata, including links that help in explaining the context, meaning, process, and result of an activity (Gibson, Ostashewski, Flintoff, Grant, & Knight, et al., 2015). A digital badge can be achieved in various learning environments such as participating in online engagements and responding to informal and formal assessments. Unlike traditional degrees and grades, digital badges are generally encoded in more detail with metadata that contain the specific skills, competencies, accomplishments, and abilities along with the information which has warranted this evidence (Gibson et al.; 2015, Gibson, Coleman, & Irving, 2016). Since it is difficult to get recognition for achievements and skills gained outside of a formal educational institute, the Open Badge Infrastructure (OBI) was created by the Mozilla Foundation to issue open digital badges allowing online management of learning data (Goligoski, 2012). Some educational institutions such as Purdue University have already begun using the OBI to create their badging platforms (Bowen & Thomas, 2014). Digital badges can be issued certifying those students who can demonstrate that they possess specific skill sets, knowledge, and cross-cutting skills and competencies before, during and after graduation. Thus, digital badges have the potential to not only enhance students' learning in non-didactic settings, but also supplement formal education by providing more flexible and self-centered learning options (Jabbar et al., 2016; McIntyre, 2014).

Learning analytics is a rapidly growing area in the education sector. It involves collection, analysis, and reporting of learning data from students for understanding and optimizing their learning process (Cooper, 2012; van der Schaaf et al., 2017). Paper-based student surveys were a traditional method used by university teachers to evaluate their teaching. However, ePortfolio platforms can provide sophisticated digital and in-built tools to track students' learning through advanced analytics (van der Schaaf et al., 2017). Digital analytics illustrate students' online behavior, which could aid in the understanding of students' learning. A student's learning analysis through an ePortfolio (based on their online behavior) could provide a real-time opportunity for feedback from the teaching staff and the personalization of learning. As a result, students achieve more flexibility not only in their learning, but also by creating a more interactive connection with their teachers and peers (Jabbar et al., 2016). Moreover, learning analytics could facilitate the process of evidence-based adaptation and optimization of veterinary curricula.

## Conclusion and Future Challenges

ePortfolios offer a flexible (or customizable) space for personal learning that addresses the challenges veterinary education faces in the 21st century to educate competent, adaptable graduates who are expected to display attributes of lifelong-learning and self-reflection. Here, we have provided an overview of ePortfolios and discussed their potential use in veterinary education. ePortfolios, as a sophisticated means of e-learning, can be utilized both as a product (personal learning space) and a process (for reflective and lifelong learning) in veterinary education. Undoubtedly, ePortfolios offer many advantages for enhancing student learning and current pedagogical practices. The main areas

identified in veterinary education where the potential of ePortfolios can be utilized include (i) assessing student skills, (ii) documenting and tracking clinical competency, (iii) integrating new digital technologies such as digital badges and learning analytics, and (iv) promoting a reflective learning and feedback culture that significantly strengthens educational links between theory and practice. Recording veterinary students' achievements, skills and competencies through dynamic, curated ePortfolios is ideally suited for self-directed, reflective, experiential, and lifelong learning and to ensure future employability.

Currently, little information is available on the use of ePortfolios in veterinary education. More research is required to show how ePortfolios could best enhance learning and teaching in veterinary education and the veterinary profession before a widespread adoption and implementation of ePortfolios. The selection, design, and implementation of ePortfolios in veterinary teaching and learning are challenging as the work requires considerable information technology (IT) skills and a range of digital literacies. Studies have shown that some users struggle with the adoption of an ePortfolio due to such factors as (i) lack of IT skills, (ii) lack of enough information to complete the documents, and (iii) limited access to the documents and student records during extramural placements, especially if ePortfolio access is restricted through the university intranet (Mossop, 2010). These issues can be addressed by emphasizing the importance and effective use of ePortfolios through regular training workshops, drop-in sessions and the provision of scaffolding through adequate information, guidance, and technical support.

Another major issue in the adoption of ePortfolios in veterinary education is the unavailability of a specific ePortfolio platform, which can cater to the essential needs of veterinary teaching and learning, such as the documentation and assessment of Day One skills and tracking of extramural placements, among others  Although various ePortfolio platforms have been trialed to record veterinary students' skills in the past, none of these systems offers all the necessary features required for the creation of an optimal veterinary ePortfolio. Integration of social networking sites, such as Facebook and Twitter, with an ePortfolio platform could significantly enhance the adoption of an ePortfolio as these applications have been demonstrated as means to promote student engagement in the learning process since they provide an interface with which students are already familiar (Bosch, 2009; Jabbar et al., 2016).

A consortium of international experts might be of great help to provide scholarly leadership in the development and use of purpose-built ePortfolio platforms in veterinary education. that would  not only develop and showcase the graduate attributes of 21st century veterinary graduates but also fulfill the requirements of international accreditation organizations. The preparation of the resulting ePortfolios in veterinary education would aid students  in their professional development across different courses, learning units, rotations, and externships through to and beyond their graduation from veterinary school.

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## Disclosure statement

The authors declare no conflict of interest.

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# Empowering Students To Articulate Their Narrative: A Ground-up Approach to Starting and Scaling an ePortfolio Program

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Review Editor: Jennifer Munday

## Abstract

Puget Sound leverages ePortfolio pedagogy to stimulate students' reflection on the value of their comprehensive liberal arts education. Grounded in well-established literature, students who engage in reflective practice think critically, integrate their learning and derive more self-knowledge from their academic and co-curricular experiences. To embrace the pedagogical gains by engaging in reflective practice, Puget Sound's ePortfolio program encourages students to weave their experiences and unique passions into a coherent and meaningful narrative. Launching an ePortfolio program then required developing campus recognition of both why reflective practice is important to student learning and how ePortfolio pedagogy achieves the goal. Starting small with excellent examples and a coherent vision enabled us to design entry points for faculty and students alike. Resources vital to program development included faculty workshops that emphasized pedagogy, course specific templates, trainings, and in-person as well as online resources to provide users with a focus on content creation over mere technological proficiency. Using templates and program assistants to support implementation minimized barriers and lightened the faculty burden often associated with integrating a new course-based technology. These practices led to ePortfolio expansion, across the curriculum and co-curriculum alike, that generated student and faculty champions who recognized the value of ePortfolios done well. Engaging and invigorating stakeholders to implement what Chen refers to as folio thinking across campus deepened student learning and promoted student agency.

## Introduction

Experiential Learning at the University of Puget Sound launched with a deep commitment to provide opportunities for students that connect academic learning to novel and engaging experiences (Kolb, 1984). These experiential learning connections deepen learning, self-knowledge, and potential career paths (Ash & Clayton, 2009; and Seifer & Connors, 2007). Three core objectives guide the development of experiential learning opportunities for students in the curriculum and co-curriculum: 1) deepen and integrate experiences through meaningful reflection, 2) develop self-knowledge, and 3) articulate their narrative. Most importantly, students must be able to articulate the full meaning of their experiences within their education and understand how those experiences will translate to life beyond graduation.

ePortfolio has become the method by which students are encouraged to document and make visible this reflective integration process. As an illustration of this need, a senior student met with one of the authors, the student's advisor, to ask for help with a graduation school application for a program on building stories for

marginalized populations. The student knew the program appealed to her, but she could not say why. She was stuck. During the meeting, the advisor attempted to use inquiry to lead the student to consider her experiences: What project did you do in my class on Organizing Difference? Whom did you work with? What did you learn from the collaborative effort that led you to choose your next project? As the student was continuously prompted, she just could not recall. The advisor writes, "Although I was fully aware of the student's class project, plus I knew what she had done in subsequent classes, I finally just logged into our LMS and pulled the project up for her. In my mind I was thinking, "I shouldn't be the person who owns her narrative. She should own her narrative and her evidence to be able to connect the dots and prepare her graduate school statement." The student had no way to tell her story (the student did get into graduate school).

A successful ePortfolio program then requires a deep commitment to student learning, strong structural resources, and a captivating vision to inspire faculty and students to engage with ePortfolio. At Puget Sound, the Sounding Board ePortfolio program began with a couple co-curricular opportunities. This "small start" approach, which offered excellent examples and a coherent vision, provided entry points for faculty and students alike. Resources vital to program development included faculty workshops that emphasized pedagogy, course specific templates, trainings, and in-person as well as online resources to provide users with a focus on content creation over mere technological proficiency. In particular, templates and program assistants used to support implementation minimized barriers and lightened the faculty burden often associated with integrating a new course-based technology. These practices generated an ePortfolio expansion, across the curriculum and co-curriculum alike, that encouraged student and faculty champions who recognized the value of ePortfolios done well. Engaging and invigorating stakeholders to implement folio thinking (Penny Light, Chen, & Ittelson, 2012) across campus deeply aligns with some of our essential reflection outcomes, such as deepened student learning and increased student sense of self and agency.

## Start

### Start with Why

"We do not learn from experience, but from reflecting on experience," wrote John Dewey (1938). Since reflection is critical to deep, meaningful, experiential learning, selecting an ePortfolio platform that enabled this foundational practice was critical. When ePortfolios are done well, they support students' ability to collect artifacts and evidence of their learning, reflect on those curricular and co-curricular experiences, and curate a narrative that showcases their accomplishments and growth in a holistic manner (Enyon, Gambino, & Torok, 2014). As a tool that facilitates reflection, ePortfolios then empower students to know, own, and articulate their academic, personal, and professional narrative. For this reason, each ePortfolio class training, every faculty workshop, and each ePortfolio event begins with the value of reflection. Whenever possible, moments of reflection precede anyone touching a computer. Whether thinking about coursework, an internship, or a club, training participants are asked to first consider such questions as:

- **What?** What happened? What did you do?
- **So what?** What made that meaningful? What did you learn?
- **Now what?** What does this mean for you as you take your next steps?

This reflective process, coupled with a focus on pedagogy, articulates our WHY (Sinek, 2009) for ePortfolios. Finding the reasons to start with takes time and intentionality. One place to begin is to engage with and learn from dynamic stories of colleagues at other institutions at conferences like the AAEEBL annual meeting or the AAC&U ePortfolio forum. These spaces provide meaningful learning from other institutions that may inspire action at one's own. Another important step to building a strong foundation is by learning and sharing the evidence-based

practices in books and articles, to avoid the distraction of the flashy lights of a new technology. Puget Sound has also significantly benefitted from developing relationships with colleagues at other institutions who shared their stories and advice, and even presented at professional development workshops on campus.

## Start Small To Generate Good Examples

Led with the conviction that students must not only graduate with experiences they can use but that they must also document and understand how those experiences will apply in their future work and life, the ePortfolio program first launched alongside a pair of internship programs run by members of the Experiential Learning (EL) team. Starting with in-house programs enabled control of the framing, structure, and scaffolded support offered throughout the ePortfolio process. This guidance set the foundation for ePortfolio done well on campus and, importantly, resulted in the development of excellent ePortfolio examples.

Particularly valuable among ePortfolio elements were the field notes where students processed their experiences by documenting the tasks, challenges, growth, and successes of each week of their internship. Directing students' attention to the learning process through reflection allowed them to account for their learning in real time, thus mitigating hindsight bias as students completed their internship experiences. In addition to process-centered pages, ePortfolio templates also contained reflective prompts at the culmination of the internship to showcase student accomplishments. A curated showcase page prompts students to engage in reflection across time to make meaning of pivotal learning moments, thus empowering students to highlight the value of their experiences. Following the Rolfe, Freshwater, and Jasper (2001) model,

Figure 1. Examples of Student Internship ePortfolios in Sounding Board

students were asked to articulate what they did, why that work was meaningful to them, and how they intended to extend or apply the skills and knowledge they developed. The ongoing weekly reflection paired with this summative reflective process scaffolded students' development of their authentic voice and equipped them not only to express their narratives through an ePortfolio, but also to speak about those experiences in compelling ways. For context, view the internship program template.

While students can share ePortfolios within the campus portal or make them available on the web, students are encouraged to share their

showcase portfolios at a symposium featuring students engaged in an immersive summer experience. The symposium is open to faculty, students, and community partners in order to energize engagement in Experiential Learning programs and celebrate the exceptional efforts of the students and community partners.

As a large number of students participate in the Reflective Immersive Sophomore Experience (RISE), our sophomore internship program, faculty are invited to take part in the ePortfolio assessment process. Participating faculty evaluated students' ePortfolios using a customized rubric. Exposure to these compelling student examples enabled faculty to envision what might be possible in their own courses and programs. The value of ePortfolio demonstrated and articulated by students they know or connect with is inspiration for their own adoption of ePortfolios. Public ePortfolio examples of Experiential Learning programs are available to view.

## Start with Interested Partners

At the University of Puget Sound, the ePortfolio program has grown organically over time in a ground-up approach. Partnerships are forged with individuals and departments across campus who express interest or serve as strategic partners. When identifying initial campus partners, the following were considered:

- Where is there a natural programmatic alignment or connection?
- Whose current work is ideally suited for ePortfolios?
- Where might ePortfolio solve an existing problem?

For example, the way ePortfolio supports the ability to document learning moments over time offered a natural connection to academic advising. Development of several programs centered around internship and pre-professional experiences also made partnering with Career and Employments Services a natural fit. Additionally, ePortfolio's ability to share dynamic content with professional audiences deepened connections with Career Services.

Similarly, select coursework seemed ideally suited for ePortfolios. In the African American Studies course, Public Scholarship, students developed content intended to be shared with a public audience; thus, the ability to share writing, vlogs, and images via an ePortfolio was a natural match. With a similar focus on a public audience, Career Development courses facilitated by Career Services staff presented an opportunity for early ePortfolio adoption.

For years, the Occupational Therapy graduate program had looked for a way to reinvent their traditional coursework binder. Since the program already utilized a high degree of reflection and valued documenting learning and growth over time, the ePortfolio platform solved their problem of how to collect students' work in a portable and professional format. In particular, the department worked together to integrate courses and the professional requirements of an Occupational Therapist to not only help students demonstrate practitioner competency but also articulate their own growth and development of a personal philosophy.

These foundational partners and early adopters were critical to the growth and development of the ePortfolio program. Although departmental approaches and efforts underwent significant revision and improvement since their first ePortfolio efforts, they continue to be enthusiastic users. Many lessons were learned from partnering with those early adopters, and their enthusiasm, innovation, and resilience impacted the efforts of those who would come next.

## Start with the Pedagogy

Beginning with the learner in mind, faculty can consider the desired outcomes for implementing an ePortfolio into their course or program. When faculty express an interest in incorporating ePortfolios into their courses, it is recommended they meet with the ePortfolio Program Manager or another member of the Experiential Learning office to talk through their ePortfolio vision. These individual consultations allow faculty to process how the ePortfolios may add value to their students' learning experiences and not simply add to the

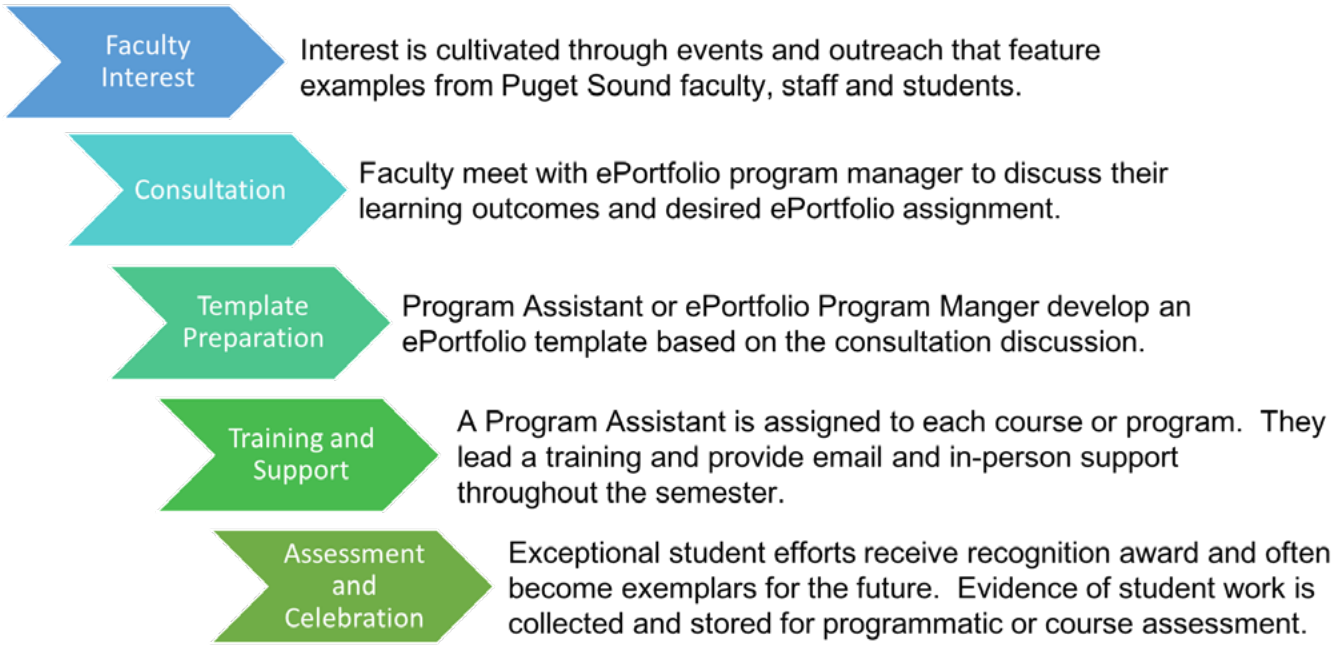


Figure 2. Process of ePortfolio Adoption for Courses and Programs

students' workload. Interested partners receive individualized support from ideation to implementation (see Figure 2 above).

Creating a reflective strategy focused on academic learning encourages faculty to start with the end in mind. Faculty are first encouraged to set goals; they are asked to consider what they want to hear their students say. Before faculty generate questions that promote deep or critical thinking broadly, they are asked to identify what kind of outcome they are looking for: Deeper levels of learning? Reflection on the understanding of information? Transformation of information into a different form? Evaluation? Only after faculty members are clear on their goals are they engaged in questions about how ePortfolio use will enhance or deliver those goals.

As the Experiential Learning team discusses ePortfolio options, Pentadura's (2003, 2015) SAMR model of technology integration (see Figure 3 next page) provides a framework for the discussion and for determining if ePortfolios make sense within their course:

- How will learning be deepened or extended as a result of students' engagement with the ePortfolio?
- How can developing an ePortfolio make visible the students' learning process and individual growth?
- In what ways will utilizing an ePortfolio transform current assignments and add value to those experiences?

The model emphasizes utilizing technology to generate an increase in functionality or alter student work in meaningful ways. Empowering students to be creators rather than simple consumers or users of technology can increase their ownership of course content. Making ePortfolios visible to all members of the course or even members of the university can also shift how the course assignments function. Asking students to scroll past and engage with previous iterations of their work in a process ePortfolio highlights students' learning journey and growth throughout a course. Building digital literacy and storytelling equips students with transferable skills relevant in both their academics and the workplace. The objective is not mere substitution: it's about deepening and connecting learning experiences. Faculty are encouraged to think beyond asking students to upload a file or two into an ePortfolio page and consider options like the

- Theatre professor of a Directing course who transitioned from a collection of papers in a binder to an ePortfolio that paired the written and visual analyses used to research and prepare their productions. Curating research with directors' notes and

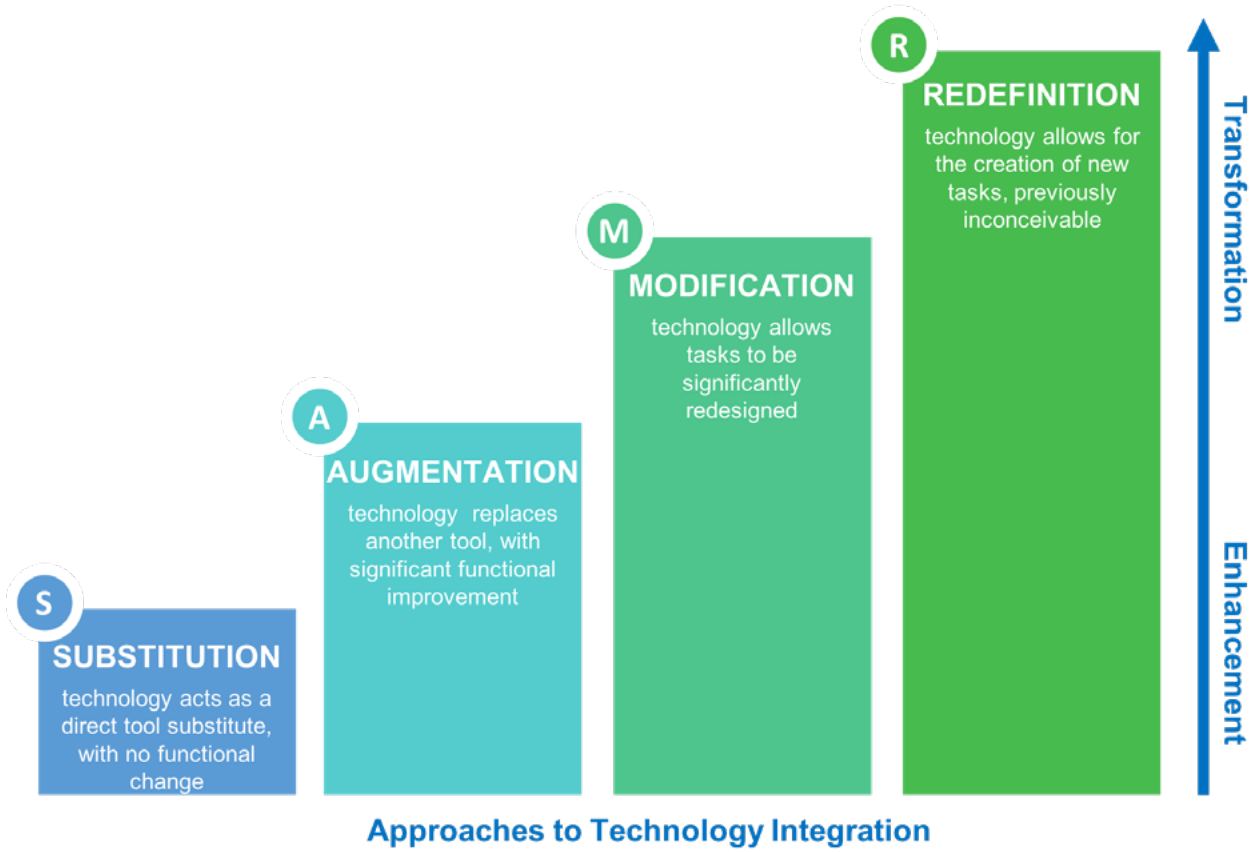


Figure 3. Image Inspired by SAMR Model of Enhancing Technology Integration (Puentedura, 2003, 2015)

photographs from the plays gave students experience in developing a professional, public-facing director's website. (Template)

- Japanese professor who asked her introductory students to write small paragraphs using each unit's vocabulary and grammar. Students' ePortfolios included the text of each unit's paragraph paired with an image and an audio recording of them speaking in Japanese. This process portfolio highlighted for the students their tremendous growth and linguistic development over the course of the semester. (Template)
- Biology professor who wanted students to view their research project through a lens of developing expertise over time. Students uploaded artifacts from significant milestones in the research process (proposal, chemical mechanism, paper, presentation, and poster) along with a reflection on how that component of the research process deepened their understanding of the disease they chose to research. (Template)

Starting with the student and learning goal(s) in mind enables faculty to build meaningful learning experiences based in solid pedagogy. As a result, the ePortfolios developed by the students are excellent evidence of their learning processes. Students communicate an increased sense of ownership of the content they develop and appreciation for the experiences that made that learning possible.

## Grow

### Scale Up by Lowering Technology Barriers and Providing Support

The vision and intended value of an ePortfolio assignment may be sufficient direction and motivation for the highest achieving students to produce exemplary work; however, the majority of students require additional support and resources. In response to the needs of the campus community, the Experiential Learning team developed and implemented support structures that seek to eliminate barriers to getting started and provide technical training for students so faculty need only to develop the why and how of ePortfolio course integration. The following list offers support structures found to be successful in growing Puget Sound's ePortfolio program:

- **Templates** tailored to individual course assignments. Based on 1-on-1 consultations with faculty, EL staff and student program assistants build customized templates with prompts and placeholders embedded in the pages that lead students toward meeting (at the very least) the minimum expectations of a proficient assignment. Templates help support students to engage easily and quickly in developing their ePortfolio content. (Course Template Examples)
- **Trainings** included for every instance of ePortfolio use. A member of EL will visit a class or host a workshop to provide students with framing and support. The ePortfolio assignment is always framed in a way to make visible the learning objectives. Revealing these outcomes early on helps to motivate students by emphasizing the value of their work. Whenever possible, time for reflection in the form of writing, brainstorming, or discussion precedes any use of technology. Building in time for students to develop content in their ePortfolio during the session also increases training efficacy. (Generic Course Training)
- **Professional Development** offered regularly and through a variety of structures. From multi-day workshops to Lunch and Learn conversations, faculty and staff are invited to discuss ideas and explore what might be possible with ePortfolio in their programs or courses. Whenever possible, examples and stories from campus members are featured in the conversation.
- **Program Assistants** are students who work for Experiential Learning and support ePortfolio efforts across campus. They meet with faculty early on to develop a customized ePortfolio template, lead trainings, and provide ongoing support to both the faculty member and their students throughout the ePortfolio integration in the course. Program assistants support current ePortfolio efforts and develop opportunities for innovative ePortfolio use.
- **Full-Time Staff** enable the robust ePortfolio offerings and support on campus. The ePortfolio Program Manager utilizes a strong background in pedagogy and educational technology to facilitate the diversity of ePortfolio work occurring on the campus and keeps that work rooted in the reflective practice that drives all Experiential Learning efforts.

## Scale Up by Empowering Faculty

Puget Sound faculty who willingly choose to engage in ePortfolio within their classrooms often produce the best instances of ePortfolios for students. Yet, widespread adoption and enthusiasm for ePortfolio by faculty required more effort and time than similar efforts among students. Patience, optimism, persistence, and consistency were key to implementing and expanding the ePortfolio Program.

From the beginning, the intention was to start with good pedagogy. Early campus partners who were excited by the pedagogical approaches and outcomes available through ePortfolio technology laid the strong foundation for subsequent growth. One key approach to igniting ePortfolio use framed with a pedagogical lens was by hosting professional development workshops. The first ePortfolio workshop featured faculty members speaking about reflection. Starting with examples from campus faculty grounded in strong pedagogy quickly communicated to attendees that integrating ePortfolio is not about a tool. Guest speakers from other institutions and our vendor offered important perspectives on integrative learning with ePortfolio technology and demonstrated technological expertise and shared excellent examples.

This workshop became an annual occurrence. The year following the inaugural workshop again featured a guest speaker as a keynote in addition to showcasing three Puget Sound faculty presenters who shared their ePortfolio experiences from their classes the previous semester. Faculty from a number of departments and disciplines joined the workshop, but most notable was a strong showing from the economics department who came to hear their colleague present about her use of ePortfolio in ECON 101. As a result of her trailblazing efforts, two of her colleagues adopted and customized her assignment for their own ECON 101 courses the next semester. Subsequent efforts have led to ePortfolios being used in three distinct economics courses, implemented by four different professors in a total of 18 different courses in the past two years (Table 1). No, not every economics professor has chosen to utilize this tool, but that is the beauty of the opt-in model. Professors should be able to select the methodologies, approaches, assignments, and technologies that best suit their teaching styles and the needs of their students. Faculty choice is more likely to result in ePortfolios done well as

opposed to ePortfolios implemented begrudgingly (and often poorly) due to mandates.

| Term | Courses | Classes | Students |
|---|---|---|---|
| Fall 2018 | 1 | 2 | 54 |
| Spring 2019 | 2 | 5 | 115 |
| Fall 2019 | 1 | 6 | 170 |
| Spring 2020* | 3 | 5 | 116 |

Table 1. Growth in Economics Department ePortfolio Use
*Please note that the decline in Spring 2020 is due to the variability of departmental course offerings in this term.

The most recent workshop was a watershed moment. The keynote speaker was a faculty member who had only attended the workshop the previous year as an ePortfolio novice. During the next two semesters, she implemented ePortfolios in three different courses: a first-year writing seminar, an intermediate-level music class, and a senior capstone course. With a workshop theme titled "From Intro to Capstone: Holistic ePortfolio Integration," she was an ideal candidate keynote presenter. The days and weeks following her presentation, faculty attendees could be heard saying, "I want to be like that professor!" as they shared their own ideas for ePortfolio use in their curriculum. In addition to her presentation, the workshop featured nine additional faculty presenters during breakout sessions. Coupled with presentations and support from the Experiential Learning staff, the 2020 workshop was developed and led entirely by members of the Puget Sound campus community. Moving from having outside "experts" to home-grown faculty champions inspired attendees. Hearing stories from a range of faculty speakers, from neophyte to more experienced, from intro to capstone, helped faculty members envision possibilities for their own courses and departmental curriculum.

Given the focus of the workshop, not only were faculty highly encouraged to attend, they were also encouraged to bring a colleague from their departments. Building on the collaboration seen the previous year from the economics department, workshop elements were tailored to encourage collaborative work within departments, giving them time and support to consider programmatic implementation of ePortfolios.

From individual faculty champions to departmental momentum, the growth we have experienced has been simultaneously strategic and organic. As Puget Sound faculty experiences support the research-based outcomes seen in ePortfolio literature, promotion efforts are more likely found among faculty users than by members of EL staff. As a result, departments ranging from Economics to French, from Music to Exercise Science embrace instances of ePortfolio use across their programs. Faculty efforts to revise the curriculum at Puget Sound have even endorsed requiring ePortfolio use in foundational coursework like a First-Year experience. While grounding in a pedagogical foundation is key, even more important are the inspiring narratives of pedagogy that come to life within the classroom and are spread across campus by faculty.

## Scale Up by Encouraging Individualization and Choice

No single approach to ePortfolios will work for all members of a university. Faculty pursue student learning outcomes tailored to their unique disciplines. Staff working in Student Affairs encourage students' co-curricular engagement, academic success, and social/emotional well-being. Academic Affairs and Career and Employment Services help students take their best next steps in their academic and professional journeys. Given the diverse range of work occurring on campus, we encourage faculty and staff to choose an ePortfolio approach that makes the most sense for them (Table 2: See next page).

| | | |
|---|---|---|
| **Bite-Sized** | | |
| Modify One Assignment | Some faculty will think embracing ePortfolios means transitioning all coursework to an ePortfolio format. However, starting with a single assignment feels much more manageable. A professor of a senior capstone course asked students to create a single page with the different writing samples from the class and write about the transferrable skills developed in the writing process and showcased in the final products. This single page was designed to potentially be included in a professional showcase portfolio if students chose to continue adding to it. | Template<br>Student Example |
| Introductions and Advice | As members of the Academic Advising team, Peer Advisors work with first-year students as they navigate the transition to college life and academics. These students created introductory ePortfolios to share with their first-year advisees. Peer advisors could choose from several page options including About Me, What I Wish I Knew..., Recommendations, College Academics, and more. | Template<br>Student Example |
| **Mid-Range** | | |
| Document the Process | With the (common) focus on the final product, the process used to develop that product can be undervalued. One faculty member wanted students to engage more deeply in the reading, discussion, and research process, so her first-year writing seminar class documented that work in their ePortfolio. Students developed a research "playground" with reflections on each day's research activities paired with the various resources they explored including documents, articles, videos, and more. | Template<br>Student Example |
| Build a Course Collection | In the African American Studies course, Public Scholarship, students were asked to develop their ability to share and connect with external audiences through vlogs, reflections, and articles. Given the intended audience of the content the students developed, an ePortfolio collection seemed an appropriate product. | Template<br>Student Example |
| Tell a Story Over Time | Field Notes have become a signature component of ePortfolios developed during internships. Students are asked to document in reflective prose and with collected artifacts (images, videos, etc.) the narratives of their internship experience. Weekly field notes allow the students to document learning in real time, processing their experiences as they occur. | Template<br>Student Example |
| Reflect on an Experience | After returning from a study abroad experience in Thailand, students in an International Political Economy class were asked to pull together reflections from their travels, home stay, and research efforts abroad in an ePortfolio. The professor introduced this assignment before students left so they would collect appropriate content and artifacts during their trip. Final ePortfolios were shared at a Study Abroad symposium. | Template<br>Student Example |
| Share Information | For a senior capstone course, a group of Music students was given the option to transform the traditional research paper into an ePortfolio collection. A number of students chose the ePortfolio options to weave images, links, and documents together with their prose to create a collection that could be broadly shared. | Template<br>Student Example |
| **Holistic Integration** | | |
| Academic Showcase | Students majoring in French are asked to build a culminating ePortfolio highlighting signature moments in their majors including writing samples, internship experiences, and studying abroad. Students make meaning of their academic journeys by highlighting their growth and articulating the personal, professional, and intellectual value of their disciplinary study. | Template<br>Student Example |
| Professional ePortfolio | ePortfolios provide a customizable space where students can communicate their experience, skills, and interests. In a career development class, a workshop, or an individualized appointment, students can leverage this tool to connect with employers or graduate schools. | Template<br>Student Example |

Table 2 .Engaging in ePortfolio Pedagogy: From Bite-sized to Holistic Integration

We would like to acknowledge the generosity of Puget Sound Faculty and Staff who have permitted us to share templates that reflect their assignments and work and the students who have graciously given permission to share their ePortfolios.

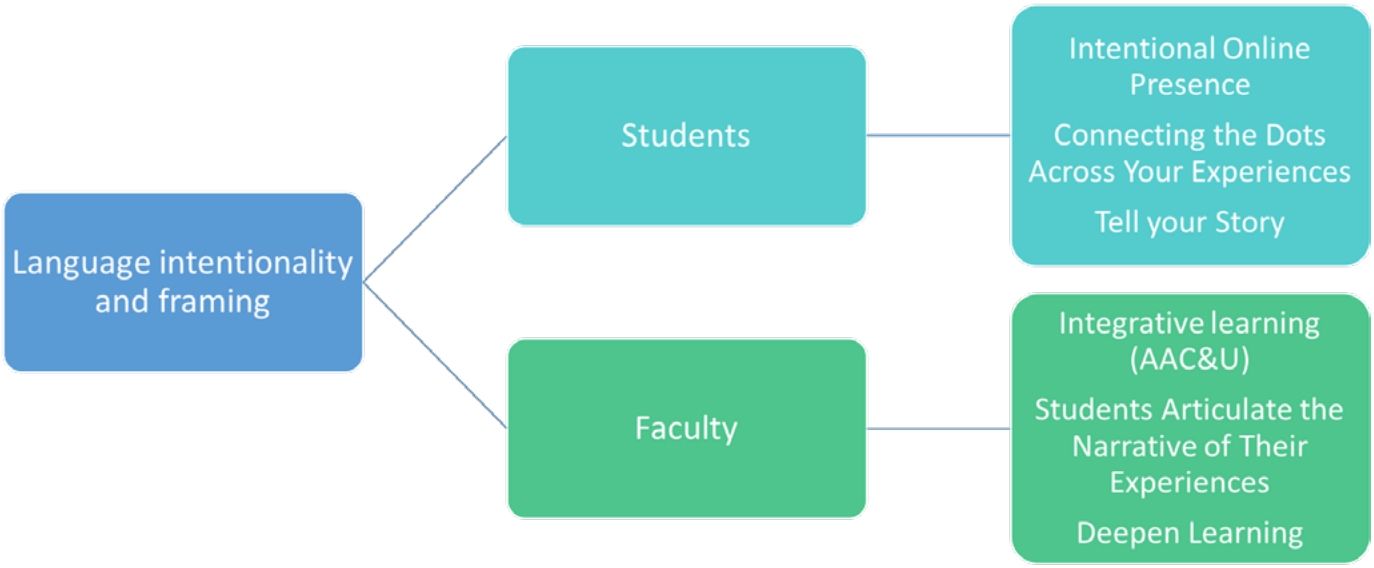


Figure 4. Tailored Messaging Frames the Value of ePortfolio Use for Students and Faculty

## Lessons Learned

### Messaging

The intentional choice of language deployed to talk about ePortfolio is an important part of encouraging users, whether faculty or students, to understand the "why." Whether offering a group training or working one-on-one with a student, the language used is deliberate and consistent. For example, in an introduction to ePortfolio, students are asked to consider all the spaces where they have a digital footprint. As students explore all the ways they are represented online, we encourage them to develop an intentional online presence over the happenstance Spotify playlists, Instagram, or Facebook accounts that may not tell their story in the way they wish to be perceived. The power of telling your story resonates with students because developing a personal narrative empowers them to know who they are, where they've been, and where they are headed next. Using reflective prompts to process their experiences encourages students to use ePortfolios as an opportunity to connect the dots across their experiences. As students' experiences and accomplishments shift over time, they often look back at their first "About Me" page and remark, "I don't even recognize that person because I have changed so much since then." In looking back to tell their story, they learn more about who they are and what they have accomplished as a means to capturing their own story and sharing it with others, whether with classmates, the campus community, or potential employers.

These messages resonate so strongly with students using ePortfolios that they internalize and use the language naturally as they speak about their experiences. After a recent donor lunch, one of the authors met with a development officer and donor who arrived at her door talking about a wonderful student presentation. As the development officer told the story about the student luncheon speaker, she remarked, "Now that I think about it, the student talked about his experiences in the same way you do." This moment illustrates how intentional language that frames students' experiences empowers them to articulate their narrative in ways that communicate the meaning derived from the process of folio thinking.

Likewise, faculty benefit from language that frames their understanding of ePortfolio use as pedagogy. Sharing ePortfolio as grounded in pedagogy with a user-centered lens means the message aligns with faculty goals: Solid teaching. Deep learning. Connections between ideas. Interpretation. Application. Synthesis. Perspective taking. In addition to personal development, ePortfolio provides a place to develop opportunities to deepen academic learning within and across the disciplines (Eynon, Gambino, & Torok, 2014). Faculty also appreciate the way ePortfolio supports intentional, integrative learning. By asking students to make knowledgeable connections across disciplines, take on different perspectives, or interpret and apply knowledge, deep, integrative learning is no longer left to chance. Consistently framing ePortfolio use as ePortfolio pedagogy, faculty well understand and appreciate that ePortfolio is only "done well" (Eynon and Gambino, 2017) when rooted in solid pedagogy. When students are able to articulate the narrative of their academic and co-curricular experiences, faculty are able to celebrate the evidence of deep integrative learning (Figure 4).

As mentioned previously, knowing and being able to articulate the "why" behind an ePortfolio program is critical. Similarly, taking time to develop and hone messaging pays off for campus stakeholders. Students adopt messages that not only help them understand the "why," but also help them process and articulate what they take away from their coursework and experiences. For faculty, focusing on developing pedagogy that deepens student learning and ePortfolios rooted in reflection encourages them to share their efforts with colleagues. A final benefit is that community partners and campus stakeholders alike often remark about the articulate and insightful manner in which our students can share their stories, which can be attributed to intentional messaging and an emphasis on reflection.

## Best Next Step

With an emphasis on increased and integrated learning for students, implementing even small elements of folio thinking into a learning experience can have a positive impact. Faculty and staff need not revise every aspect of their course or program to include ePortfolio, nor will using ePortfolio solve every learning or assessment problem. The key is to hone in on the next step that makes the most sense for each individual. For faculty who are just getting started, perhaps adopting a reflection assignment at the end of the term or small reflective moments along the way are their best next steps. For campus partners already implementing reflective practice with their students, student staff, or advisees, they could choose to utilize an ePortfolio to capture those reflections and make visible to the student the learning that is occurring over time. Some faculty and staff will be ready to jump in with both feet, and their best next step will be considering thoughtful strategies for integration, including timely and constructive feedback on ePortfolio work and scaffolded assignments to give students the time and space needed to develop both their reflective and digital skill set.

## Myths About ePortfolios

Over time, as engagement with stakeholders across campus increased, several misconceptions about ePortfolios surfaced. Realistic expectations for both faculty and students are essential for successful ePortfolio implementation. The following outlines key myths to actively address with both faculty and students.

### Myth 1: ePortfolios are fun

This may be less of a myth and more of a misunderstanding. Developing an ePortfolio is enjoyable for many students. They have the opportunity to engage in content creation rather than mere content consumption, and that opportunity can be energizing and exciting for many students. However, not all students will love the idea of this type of work. The reflection being asked of them can and should stretch the students, asking them to think of themselves and their learning in new ways.

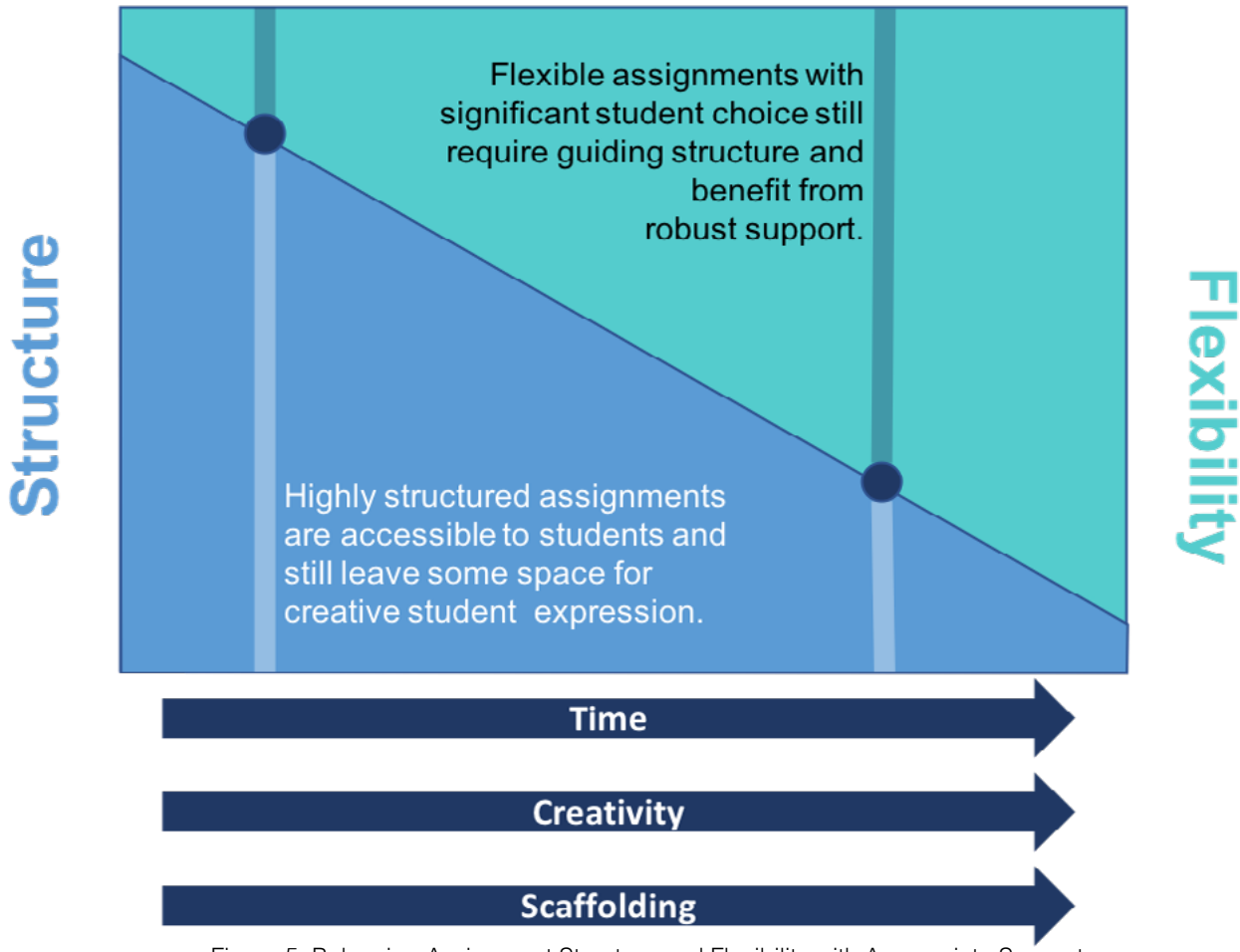


Figure 5. Balancing Assignment Structure and Flexibility with Appropriate Support

The myth of this statement stems from the focus on fun as the primary purpose of an ePortfolio. In fact, some faculty have argued against using an ePortfolio in their class, because students said they "don't like (the idea of) ePortfolios." However, when was the last time a faculty member assigned a 30-page research paper and received resounding cheers and applause from their students? Similarly, an employee assigned a budget to balance or a manual to write is unlikely to respond sincerely with "That sounds like fun!" Ideally, students would enjoy their research and employees would love their job; however, fun is not the primary goal of the tasks mentioned. Similarly, building an ePortfolio can be fun, but perhaps the statement should be rewritten:

> *ePortfolios done well have value and improve student learning.*

### Myth 2: All students will make beautiful ePortfolios

The creativity exhibited by many students when telling their story using ePortfolios is delightful. Puget Sound students often surprise faculty and staff with the dynamic and innovative ways they demonstrate their learning using this technology. Some students possess a natural flair for design while other very capable students may struggle with the creative possibilities enabled by this technology. Creative work can be challenging even for naturally creative individuals; additionally some individuals feel like creative expressions come less intuitively for them than for others.

Kuh and O'Donnell (2013) identify attributes that often accompany quality high-impact practices, including appropriately high expectations, significant investment of time, and constructive feedback. To support all students in developing quality ePortfolios, it is essential to set performance expectations at appropriate levels based on the amount of time and support students will be given to complete their work. Highly structured assignments can be done relatively quickly although

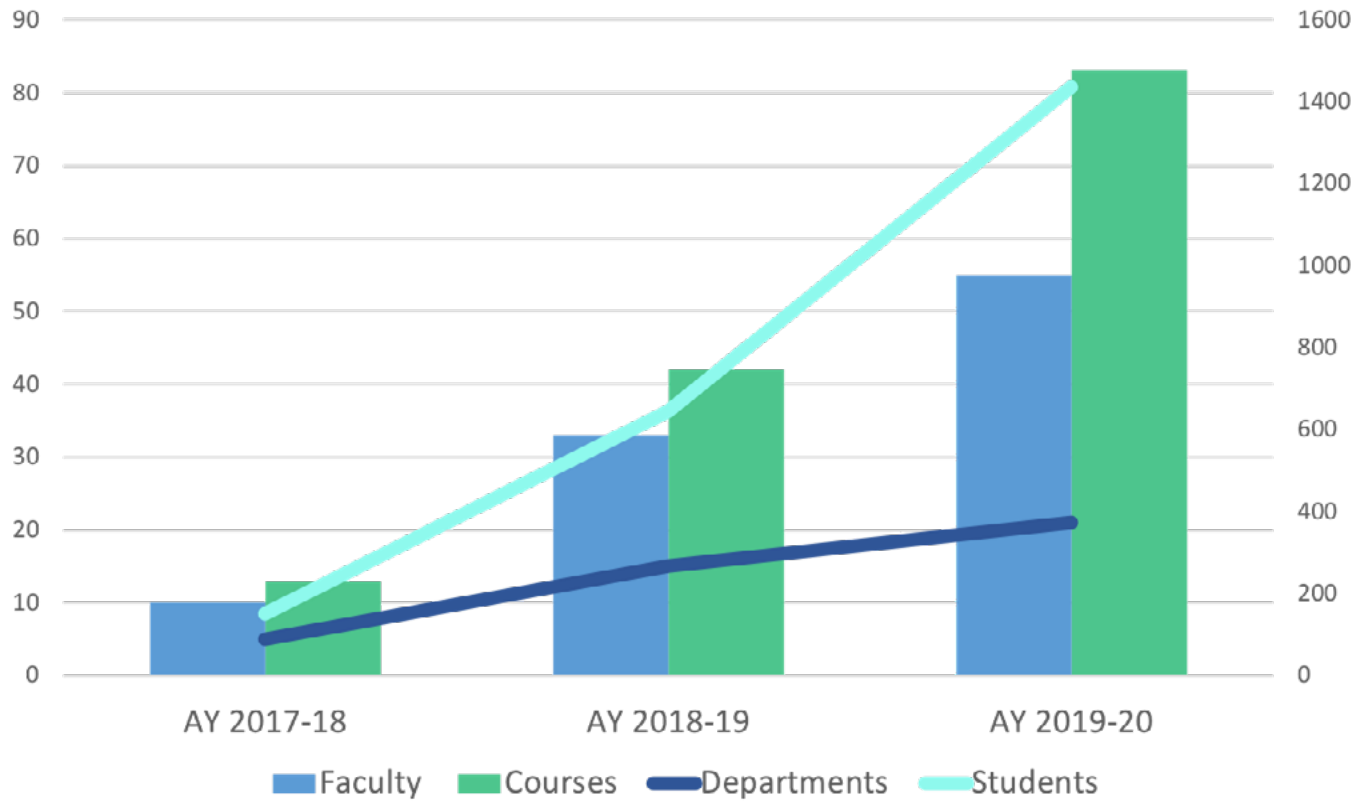


Figure 6. Three-year Growth in Departmental ePortfolio Use at Puget Sound

they may incorporate less creativity and individualization. Generating creative ePortfolios demonstrating customization takes time and must be paired with scaffolding and feedback. Figure 5 offers a visual display of the balance between flexibility and structure faculty might consider when implementing ePortfolios.

Incorporating opportunities for students to share their work with their peers or even broader audiences provides opportunities for constructive feedback and for celebration of their efforts. In the pursuit of ePortfolios done well:

> *Clear expectations and regular feedback support students in doing their best work.*

Myth 3: Students today are tech savvy and will pick up ePortfolio skills easily.

In a growing population of digital natives, it is easy to assume that all students possess the digital literacy needed to develop dynamic digital content. Although many students are experienced digital consumers, technological proficiencies vary widely based on access and exposure to technology, tools, and training. Providing both in-class and 1-on-1 support meets students where they are. A diverse set of resources including drop-in hours, online tutorials, and email support enables students with emerging proficiencies to ease into the technology and simultaneously support students with more experience. A scaffolded, supported approach to introducing the technology results in all students having the tools they need because:

> *Training and support help the ePortfolio technology feel more intuitive.*

## Making ePortfolio Unavoidable

Engaging and invigorating faculty builds partners that will make ePortfolio, if not required, unavoidable. The approach at Puget Sound is not for students to do ePortfolio all the time but to do it well in as many spaces as possible so as to deepen learning that also promotes student agency and to build on lessons learned during

| | 2017-2018 | 2018-2019 | 2019-2020 |
|---|---|---|---|
| Faculty using ePortfolio in a course | 10 | 33 | 55 |
| Courses with an ePortfolio component | 13 | 42 | 83 |
| Departments with course or programmatic ePortfolio use | 5 | 15 | 21 |
| Student ePortfolio users within courses | 151 | 646 | 1435 |

Table 3. Three-year Growth in Departmental ePortfolio Use at Puget Sound

the journey to implement folio thinking (Penny Light, Chen, & Ittelson, 2012) across campus.

One important practice to use is non-attachment in an ePortfolio program. If the intention is clear, with growth that emerges from strong examples, there is no need to become forceful ePortfolio promoters. Rather, through a commitment to providing consistent and reliable support that seeks to ease implementation for both faculty and students, strong partnerships develop. Encouragement of taking small steps also minimizes the perceived risk of trying something new in the classroom. Faculty get involved by invitation and inspiration as opposed to mandates and requirements. Invitations to programs increased in persuasion over time as faculty members within the university were featured speakers who shared their experiences with their colleagues (Table 3 and Figure 6) .

## Conclusions on ePortfolio Implementation

ePortfolios provide a dynamic, online space for students to process growth, connect academic and co-curricular learning, and articulate the narrative of their educational journey. A successful ePortfolio program then requires a deep commitment to student learning, strong structural resources, and a captivating vision to inspire faculty and students to engage with ePortfolio As Eynon and Gambino (2017) note, ePortfolio practice when done well may develop in institutions a learner-centered approach. Many of Puget Sound's efforts centered on a ground-up approach that built excellent examples of strong pedagogy coupled with reflective practice that encouraged faculty to rethink assignments, capstones, and departmental portfolios. This deep rethinking about pedagogy, coupled with reflective practice, encouraged faculty innovation and provided an integrative learning experience for students. ePortfolios done well empower students to process and link their experiences into an intentional online presence.

While a successful ePortfolio program first requires a deep commitment to student learning, a strong next step is providing structural resources such as customized templates and program assistants who provide tech support and peer mentoring. Consistent offerings of training and collaboration help faculty learn from their peers and envision possibilities. Having a big plan is a worthwhile goal; however, implementing and valuing small steps with meaningful and authentic learning is enough to drive forward toward full-scale adoption. Faculty who start small, such as moving one assignment to ePortfolio, can create excellent student examples that enable bigger possibilities to emerge across departments.

Introducing students to the value of reflection and ePortfolios when they first arrive on campus for orientation lays the foundation for future instances of reflection and content development (see Figure 7 next page). Scaffolded ePortfolio assignments built into courses and programs encourage students to further integrate their learning and develop the ability to articulate their narrative. The enduring value of reflection and ePortfolio pedagogy is evidenced by the words of one recent graduate who, upon returning from an interview, declared, "There

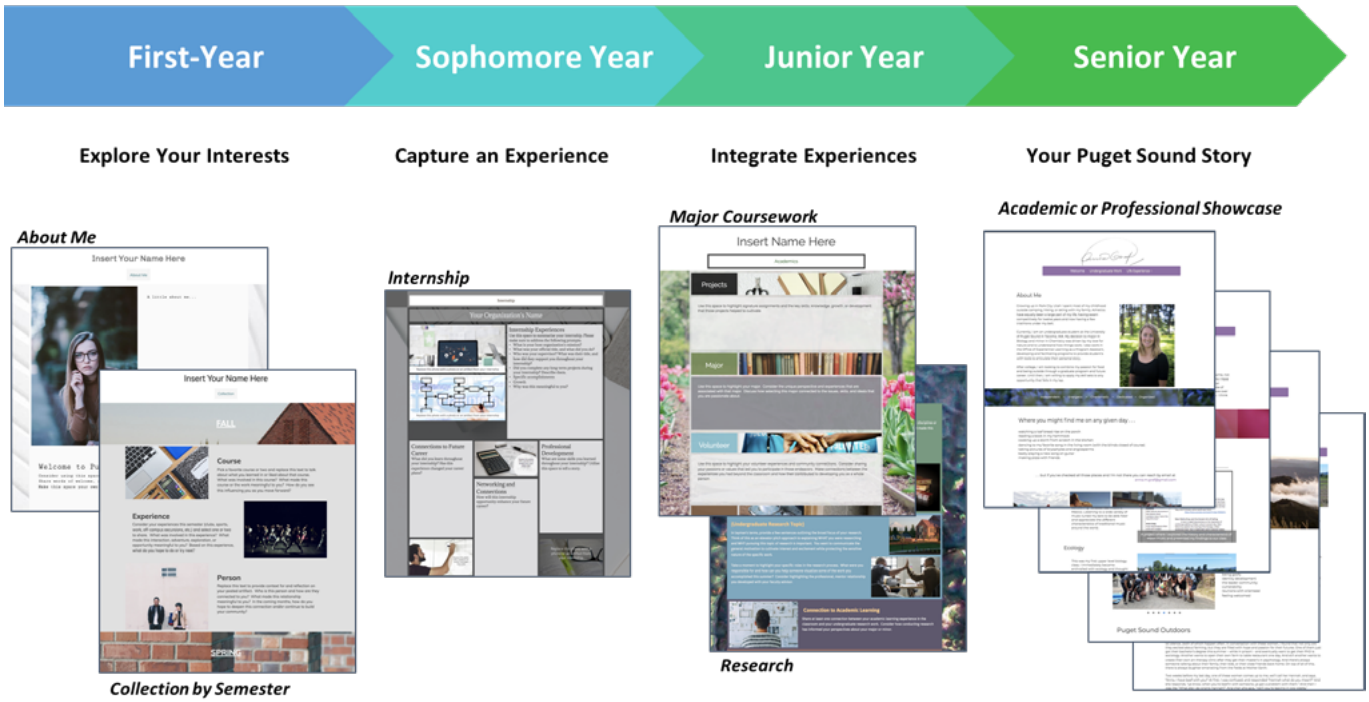


Figure 7. Scaffolded Narrative Building in an ePortfolio at Puget Sound

was nothing that the interviewer asked that I had not already processed in my ePortfolio." The creative and reflective process of ePortfolio building serves as a capstone moment of students' collegiate experience or a launch into their professional post-graduation plans.

## About the Authors

**Elize Hellam** is an educator with over a decade of experience focused on engaging students' creativity, curiosity, and critical thinking. In her role as the ePortfolio Program Manager at the University of Puget Sound, she integrates her background in student-centered pedagogy with her understanding of educational technology to develop rich, reflective experiences. She seeks to empower others to articulate their unique narratives in dynamic ways.

**Renée Houston**, Ph.D., is committed to institutionalizing experiential learning, grounded in reflective practice, that empowers students to articulate their strengths and the value of their experiences. Her dedication to experiential learning pedagogy grew out of her more than 20- year career as a Communication Studies professor where her students engaged in community-based learning and research to address inequities centered on issues of gender, social class, and race.

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# Towards More Transparency on Jobs and Skills: A Passport for Work

Author: Ronald Lievens
Review Editor: Julie McCarroll

## Introduction

Despite times of economic prosperity in recent years, many organizations are still experiencing great difficulties in filling key positions in certain sectors of the economy all over the world (U. S. Department of Labor, Bureau of Labor Statistics, 2019; Cedefop, 2018; European Commission, 2019). Many unemployed jobseekers pursue employment in sectors different from where ample vacancies exist, which is theorized to be one of the main causes of low job-finding rates around the globe (Sahin, Song, Topa, Violante, 2012). The COVID-19 crisis has reinforced this problem, with previously booming industries suddenly being faced with huge revenue losses and bankruptcy (Tucker, 2020). This has caused a critical need for many individuals around the globe to "reinvent" their careers by considering and pursuing alternatives to their professions. Furthermore, there are three ongoing structural shifts to consider: the globalization of labor markets and the consequent economic migration, rapid technological progress, and the aging of working populations. These shifts severely affect the quantity and quality of jobs, as well as their requirements (Organisation of Economic Co-operation and Development [OECD], 2017).

These structural shifts are reflected by worldwide statistics on unemployment and vacancies. In recent years, a clear shift can be observed in several economies where for each unemployed individual, the number of job vacancies that coexist is increasing. This change indicates a growing gap or mismatch, between unemployed job seekers and vacancies.

Further, it indicates a changing degree of efficiency at which a labor market operates (Daly, Hobijn, Şahin, & Valletta, 2012; Mortensen, 1994).

These issues have also been identified by the Organisation for Economic Co-operation and Development (OECD) and the European Commission, which resulted in the OECD Skills Strategy and the EU Agenda for new skills and jobs, as part of the Europe 2020 strategy (European Commission, 2013; OECD, 2012). Both agendas are based on the notion that the matching of workers to jobs can be improved by a better coordination between recruitment strategies employed by firms, public employment services, and private labor market intermediaries. In addition, the changing demands for skills have to be translated into up-to-date educational curricula. One of the main requirements for achieving this is distributing richer information regarding the particular skills that employers demand, and then contrasting those skills in demand with those possessed by workers (Cedefop, 2012).

Richer market information can be distributed through career portfolios, which have previously been operationalized as organized evidence of work readiness and specific job

skills which can be focused to show the skills that employers want (Smith, 1996). Woodbury, Addams, and Neal (2009) add that the career portfolio consists of a resume, in addition to evidence of abilities, knowledge, skills, and potential to build credibility.

In the EU Urban Innovative Action (UIA) project, Passport4Work (P4W), running from 2019 to 2021, an instrument analogous to the career portfolio is being developed: a "passport for work" (Urban Innovation Actions Initiative, 2019). The analogy passport for work refers to job-seeking individuals being able to create their own professional passport, through which they can pursue and realize professional development and career progression. The passport comprises a gamified assessment of transversal skills (to foster intersectoral mobility) as well as tailor-made eLearnings and provides direct links to education and employers through a platform function. In theory, this has a positive effect on match quality, raising the productivity level of a match, worker earnings, and firm profits (Autor, 2001). Additional benefits include lower unemployment levels, reduced transaction costs of matching, and an enhanced mobility of workers who can more easily engage in on-the-job search (Freeman, 2002). In this paper, the rationale behind the P4W project is described and practical implications for its design are discussed.

The paper is structured as follows. First, the theoretical framework is presented. In this framework, labor market mismatches are discussed and subsequently analyzed by theories on search frictions. Then, the career portfolio concept is described. This framework serves to conceptually introduce the P4W project and to discuss its utility. In conclusion, the design principles of the project are presented.

## Theoretical Framework

### Labor Market Mismatches

In economic terms, a mismatch in the labor market is an imbalance between the supply and demand for human capital. The concept of mismatch arose in the 1980s when economists attempted to clarify the sustained rising levels of unemployment in Europe (Sahin et al., 2012). There are four types of mismatches. First, a quantitative mismatch indicates that there are fewer workers available than jobs, or vice versa. It is anticipated, for example, that many OECD countries will deal with labor shortages in the future as a result of the aging working population (Gautier & Teulings, 2015). Second, there can be a geographical or regional mismatch, resulting from a geographic dispersion of jobs and suitable workers. For instance, in the Brainport area in The Netherlands, many high-tech organizations are forced to recruit suitable workers internationally due to shortages in the region (Verlaan, 2013). Third, there can be a mismatch of preferences among workers and types of jobs available. This occurs when certain characteristics of available jobs do not correspond with the preferences of the job seeker. For example, a worker may be unwilling to accept a certain job if he deems the remuneration, working conditions, or status it provides to be insufficient (Boswell, Stiller, & Straubhaar, 2004). Fourth and finally, there can be a qualitative mismatch when an individual's education and/or skills do not correspond with job requirements. In this regard it is important to note that being well matched with respect to qualifications does not rule out the possibility of being mismatched with respect to skills.

These mismatches are in part results of cyclical and structural developments and in part manifestations of heterogeneity among workers and jobs. The latter feature of the labor market is for a large part responsible for mismatches, as it elicits search frictions, which hinder the effective allocation of workers to jobs.

### Search Frictions

In the process of matching, search frictions arise due to imperfect information primarily about heterogeneous workers and open positions and a lack of coordination. The key implication is that due to the presence of search frictions, unemployed workers coexist with open vacancies. The work of Nobel Laureates

Peter Diamond, Dale Mortensen and Christopher Pissarides is considered to be among the most significant contributions to the standard theory of equilibrium unemployment, which recognizes that labor market trade is a costly and time-consuming process (Mortensen et al., 2011). Search frictions result in two distinct phenomena, which contribute to mismatches: costly job search and adverse selection.

Job search is costly because jobs differ with respect to terms, location, remuneration, career development prospects, and skills required of the worker, as well as other characteristics. Among workers, there is great variation in their skillsets, preferences, and other relevant attributes. This makes it difficult for workers and firms to make informed decisions (Mortensen et al., 2011). Because information (about a suitable job, and a qualified candidate) is costly and difficult to acquire, workers and firms have to invest in resources in pursuit of a match (Katz & Stark, 1987; Mortensen, Pissarides, Tatsiramos, & Zimmerman, 2011). For example, job seekers have to collect information, apply for jobs and engage in interviews. In turn, firms invest in recruitment and selection activities, such as posting job vacancies and conducting assessments. However, job vacancies typically lack adequate descriptions of the skill attributes, or competences, required by firms, making it difficult for jobseekers to demonstrate their suitability (Bennett, 2002). Furthermore, competences are typically approximated based on one's qualifications. This is problematic as empirical evidence has shown that a match between qualifications and job requirements is an insufficient condition for a good skills match (Quintini, 2011).

The presence of costly and asymmetric information also fosters an adverse selection. Adverse selection is likely to result because jobseekers may apply for jobs with skill requirements they cannot meet. The risk of adverse selection is reinforced by the growth of internet job search, which lowers the barriers to applying for jobs. A natural consequence is that more workers will apply for more jobs (Autor, 2001), lowering the average quality of the applicant pool and increasing the cost of selection and the likelihood of mismatch (Cedefop, 2012). Adverse selection can also occur through opportunist behavior among workers and firms. Both parties can choose to conceal or provide false information to the other party to maximize the return from the match. Workers, for example, can misrepresent their skill and productivity levels during a job application (Akerlof, 1970; Kuhn & Skuterud, 2004).

## Career Portfolios

The concept of career portfolio is a derivative of the ePortfolio concept. In the contemporary literature, ePortfolios are typically characterized as having three distinct purposes: facilitating the learning process, demonstrating learning outcomes through assessment, and showcasing learning outcomes to others (Balaban, Divjak, Kopić,, 2010; Greenberg, 2004; Instructional Management Systems, 2005). There is a consensus among scholars and practitioners that the concept is useful for career purposes, such as professional development, career planning, and job seeking (Cambridge, 2010; Jafari & Greenberg, 2003; Joint Information Systems Committee, 2007). More recent studies have emphasized its utility for careers, with interventions resulting in more career adaptive behavior by workers (Van der Horst & Klehe, 2019). Furthermore, ePortfolios are a proven vehicle for enhanced job matching by introducing higher levels of transparency about job seekers' skills (Lievens & Ferrante, 2015).

## Passport4Work

Mitigating the previously mentioned mismatches and search frictions is at the core of the P4W project. The project, which runs in the Dutch Brainport region, is part of the UIA program. In essence, P4W represents a highly personalized and gamified platform through which individuals are guided in the development of their passport for work by means of gamified assessment. Where appropriate, this process is assisted by job coaches (for instance,

when digital literacy levels prevent autonomous use). This passport can then be used for job matching purposes by sharing it with prospective employers. P4W focuses heavily on transversal skills (also known as general skills or soft skills) such as presenting or analyzing to broaden the scope of search to different sectors of industry. These transversal skills are measured through gamified assessment by incorporating game-elements in assessments. For instance, the "active listening" skill is measured by means of an interactive roleplaying game in which respondents have to evaluate the behavior displayed by actors in a simulated scenario displayed on video. For the active listening skill, an interaction is displayed between a customer and a sales clerk. The respondent is prompted to evaluate aspects such as maintaining eye contact or interrupting the customer. These behavioral anchors are based on the Occupational Information Network (O*NET), which is a competence taxonomy.

Due to the highly contextual nature of transversal skills, roleplaying scenarios are developed for different sectors of industry. As such, the role-playing scenario in which active listening is assessed can differ for the healthcare and construction industries. This allows a job seeker with a long history in construction, wishing to work within healthcare, to observe the nuances between the two distinct environments by assessing the skill in both contexts. Traditionally, soft skill assessments are conducted through surveys. Incorporating gamification elements is known to trigger different motivational outcomes, including task meaningfulness and experiences of social relatedness (Sailer, Hense, Mayr, & Mandl, 2017). Based on the outcomes of the transversal skills assessment, pathways to relevant additional training (through eLearnings or educational programs at external institutes) are provided in the platform.

In P4W, the city of Eindhoven targets specific groups of participants for which there is a high sense of urgency. These include those with a relative distance to the labor market in terms of their educational attainment and/or employment history. These beneficiaries are actively involved in the design and use of the P4W instrument. Target beneficiaries are initially addressed in three sectors of industry that have a high regional significance: healthcare, construction, and technology. To illustrate, The Netherlands is undergoing an energy transition from fossil fuels towards renewable energy sources, reflected by the Eindhoven project, Gas-free Neighborhoods. P4W contributes to this project by facilitating adequate staff in the construction sector.

Ultimately, P4W seeks to create a highly personalized and gamified platform, through which intersectoral mobility can occur for those with a distance to the labor market and, in a later stage, beyond. As such, P4W facilitates free movement on the labor market where it will be easier for job seekers to move in and between sectors. Through P4W, employers can easily find qualified employees for the jobs of today and the future.

The P4W project incorporates lessons learned from previous similar projects, such as Let's Connect, which ran from 2012 to 2015. Let's Connect also took place in the Brainport region and shared P4W's objective of making labor markets more transparent. Several lessons were drawn from this project. First, the use of strong incentive systems encourages individuals to disclose information on their skills (and other relevant attributes). Second, a passport for work needs to be selective and structured by nature in terms of its contents. This to ensure efficient matching procedures and to maintain the validity and reliability of the data in relation to the skills (to prevent matching on false grounds). Third and finally, the passport should be part of a broader platform, linking relevant stakeholders (jobseekers, employers, educational institutes) within one accessible ecosystem (Lievens, 2015). These lessons, combined with the specific requirements of the target beneficiaries and the latest insights around job matching, have resulted in seven design principles which are at the core of P4W.

## Design Principles

### Enable Use of Existing Information

Job seekers can build their passport for work in two ways: by uploading information that is readily available in other career platforms (for example, a website where someone has built an online CV in the past, such as LinkedIn) or by completing a gamified assessment available through the platform. The former relies on an infrastructure that facilitates the exchange of information across systems, for instance through an application programming interface (API). Pilot experiments will be conducted to investigate the feasibility of this information exchange through various relevant systems currently in use.

### Promote Engagement Through a Contextual, Low Threshold, Gamified Experience

The gamified design elements of P4W serve to promote its accessibility and the engagement and literacy levels of the target users. This is achieved by carefully adhering to usability requirements to ensure ease of use, for example by developing a wizard to guide users through the different functionalities of the platform. Furthermore, by incorporating principles of gaming through online role-playing games and neurogames (games in which an individual's cognitive abilities are tested), P4W seeks to differentiate itself from more classic, survey-based online assessments by appealing to motivational factors to encourage use. Role-playing assessments are also developed on a contextual basis, to ensure job seekers can relate to the scenarios depicted from their own experience and to allow them to observe differences with other sectors of industry. Finally, depending on the proficiency levels of the transversal skills, eLearnings are made accessible through the platform to offer direct learning opportunities. This facilitates life-long learning processes.

### Focus on Transversal Skills

Skills can be divided into the vocational (field-specific) or transversal (general) category. This distinction is important since vocational skills are known to positively influence the chance of being matched inside a jobseeker's occupational domain, whereas transversal skills increase the likelihood of being matched outside of one's domain, stimulating intersectoral mobility (Heijke, Meng, & Ris, 2003). This serves the increasingly boundaryless nature of career paths, which is increasingly occurring in sectors, organizations, and regions (Forrier, Sels, & Stynen, 2009). A clear trend can be observed in this regard, one which calls for a shift from thinking about job security (the security derived from a specific job) towards employment security (the security derived from the entire labor market). Whereas a passport in P4W comprises both vocational as well as transversal skills, the assessment and eLearnings are targeted specifically at the transversal skills to stimulate employment security through intersectoral mobility.

### Compatibility with Other Skill Languages Through Standardization

Matching skills is contingent on both job seekers and employers using the same skill language. There are many such skill languages in the world. The U.S.-based O*NET system is a key player in this regard. It comprises approximately 250 measures of skills, abilities, work activities, training, work context and job characteristics for 1,016 different occupations in the U.S. (O*NET, 2020). To keep the data current, the information is periodically validated through surveys of workers and firms. Similarly, in Europe, the European Skills, Qualifications and Occupations (ESCO) framework has been developed in an attempt to facilitate a European language of skills (European Commission, 2020).

Since there is a multitude of career systems and platforms based on O*NET, ESCO, or other skill languages, exchanging information across systems is currently hindered or simply not possible. In P4W, one of the key objectives is to realize a golden standard of competences, by linking the existing ones and, thus, reducing dependency on one individual framework. This is achieved by creating mappings between each of the established frameworks. In P4W, the O*NET occupations and skills are taken as a reference point, to which the other frameworks are mapped. This is done in a joint national initiative, called CompetentNL, in which government representatives and other labor market oriented stakeholders also take part.

A key first step in this regard is translating O*NET to the Dutch language to the basic A2 level. This is done to promote a common understanding of the skills and definitions involved among all stakeholders in the labor market. Then, the second step is contextualizing O*NET in the Dutch labor market, to ensure the right attribution of skills to occupations. This is done by conducting an enhanced version of the O*NET survey among employers and employees in The Netherlands and subsequently deepening the insights through expert workshops with both employers and employees. The enhancements of the survey stem from the simplification of underlying constructs and response options, which have been argued to be vague and, at times, overly complex (Handel, 2016).

## Individual Ownership of Data

Information about an individual's competence is often made explicit in an organization or through education-specific processes such as assessments. This raises questions about whether the individual or the organization which provides the tools for assessment owns the data. Furthermore, concerns of privacy and data security are the subject of global public debate. Given the sensitivity of information which can be stored in P4W, the safety of this information needs to be ensured by adhering to the latest privacy legislation.

## Validity and Credibility of Information

Enhancing a worker's employability is core to P4W. This can be achieved by facilitating the identification of prior learning, the development, demonstration, and presentation of competences through processes of formal, informal, and non-formal learning over the course of a lifetime (lifelong learning). The learning outcomes can be formalized and validated through assessments, which can be used for matching purposes.

Furthermore, given the anticipated use of P4W by employers for talent acquisition processes, credibility is an important consideration as well. This can be ensured through the implementation of certain validation mechanisms, such as the verification of information through official administrative records (for instance diplomas).

## Transparency of Data

P4W should be part of a transparent information system including individual and aggregate information on the skills possessed by workers, which can be offset against those required in firms in certain sectors and regions. Then, P4W can facilitate the strategic personnel planning and talent acquisition processes of firms and foster the ability of individuals to anticipate and react to the effects of job creation and destruction more adequately. Furthermore, this information can aid educational institutions in the development of appropriate curricula. In P4W, this is realized by making job seekers' profiles available to prospective employers, and gap analyses between an individual's skills and those required in a prospective job can be used to inform curricular recommendations.

## Conclusion and Future Research

When looking at recent labor market statistics, it can be inferred that structural shifts and cyclical recessionary effects affect many labor markets. P4W can enable workers to maintain their employability levels by developing a varied and transferable set of competences in order to be more agile and flexible in dealing with the changing requirements for work. P4W can facilitate the reallocation of workers across boundaries of affected organizations, sectors, and regions. This can be realized through a more detailed and systematic disclosure of relevant information for a match.

In the P4W project, these objectives are realized through the development of an innovative, skill-based platform through which job seekers can showcase their skills and be matched with prospective employers. These design principles represent key performance indicators, which are carefully monitored throughout the project's lifespan. Until the end of 2021, several empirical studies will be conducted to report on the project's impact. For instance, it will be studied whether P4W enhances the employability of job seekers, whether it facilitates the identification and addressing of skill gaps, and whether it results in enhanced matches with prospective employers.

## About the Author

Ronald Lievens holds a PhD in Labor Market Intermediation. His academic fields of interests are multi-disciplinary, including human resource management (HRM), labor market economics and psychology. He has experience with various action-based research projects, aimed at improving labor market participation through urban innovation. Apart from his academic work, he also has experience as a strategic HRM consultant, advising a wide range of organizations on talent management and talent acquisition processes.

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The Association for Authentic, Experiential and Evidence-Based Learning (AAEEBL) ePortfolio Review (AePR) invites you to submit articles and reports covering the broad area of ePortfolio use. We publish articles about pedagogy, research, technical, and organizational issues bi-annually. Our readership includes ePortfolio practitioners, administrators, and students. AePR is an online journal serving the needs of the global ePortfolio community and seeks to promote portfolio learning as a major way to transform higher education.

The AePR is a theme-based journal; therefore, acceptance is competitive. After a proposal has been accepted for a specific issue, the authors are paired with one of our peer reviewers. Proposals submitted for a current issue may be considered for a subsequent issue if they fit the upcoming theme.

## Article Types

We're particularly interested in the following types of articles:

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- How-to articles, tutorials on specific tools or approaches (500 to 1,500 words).
- Interviews (500 to 1,000 words) with key individuals directly involved with the use of ePortfolios.
- Announcements (up to 300 words) of items regarding the use of ePortfolios in the field.

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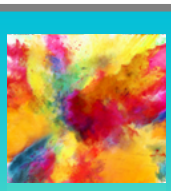

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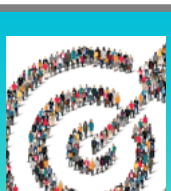

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Barbara Ramirez is currently the Director of the Class of 1941 Studio for Student Communication as well as the Assistant Editor for the Journal of Engineering Education. As a faculty member at Clemson, Barbara has taught a variety of English courses and served as the Director of the University's Writing Center where she worked with students and faculty across the disciplines. She also served as the Arts and Humanities faculty liaison for Clemson's ePortfolio Initiative and has been active in AAEEBL, serving on the Conference Planning Committee and helping edit the Field Guide to Eportfolio (AAC&U, 2017).

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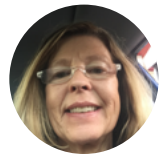
### Carra Hood / APA Style Editor



Carra Leah Hood is Associate Provost for Strategic Planning, Academic Programming, and Assessment and Associate Professor of Writing at Stockton University. In her current position, she oversees the Essential Learning Outcomes and ePortfolio initiatives as well as academic program planning and reporting.

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### Heather Caldwell

Heather Caldwell is a full time graduate student in Somatic Psychology at Naropa University where she is also a Graduate Assistant in Instructional Design. She brings her previous experiences as a full time English faculty member and ePortfolio Strategist at the University of Alaska Anchorage to Naropa University's contemplative education programs. She now focuses on the intersections of contemplative technology, folio pedagogy, and reflective practices to enhance metacognition and transference.

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Orna is an assistant professor in Dublin City University (DCU) specializing in the areas of online, blended and distance education. Orna holds a BA (Hons) in Arts, an MA in History and a Higher Diploma in Secondary Teaching from University College Dublin, and a Phd in Education from Trinity College.

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## Jenni Munday

Jenni Munday is an Associate Professor at Charles Sturt University, a regional university in Australia. Together with Associate Professor Jennifer Rowley at the University of Sydney and Professor Patsie Polly at the University of New South Wales, she has published several articles on ePortfolio and the sense of future self, and the use of visual images in ePortfolios. Recently she has presented in two online international seminars on the embedded ePortfolio within an undergraduate Initial Teacher Education program. Jenni is a Senior Fellow of the Higher Education Academy.

## Julie McCarroll

Julie McCarroll is an instructor of English as a Second Language Academic at Carleton University in Ottawa, Canada. In preparing international students for success in their discipline courses, she is interested in the ways that technology can motivate and engage learners to meet learning outcomes. Julie received an Innovation Grant from Carleton University in 2018 for her research on ePortfolios.

## Gillian Greenhill Hannum

Gillian Greenhill Hannum is a Professor of Art History at Manhattanville College in Purchase, New York, where she has been on the faculty since 1987. Since 2010, she has been a member of the Manhattanville ePortfolio leadership team, which participated in the FIPSE-funded Making Connections and Connect to Learning grants introducing the use of electronic portfolios on her campus. From 2016-18, she oversaw an Andrew W. Mellon Foundation grant supporting development of the college's signature Atlas ePortfolio program, which she directs. She has presented at AAEEBL national and regional conferences and at AAC&U ePortfolio forums.