IJeP International Journal of ePortfolio

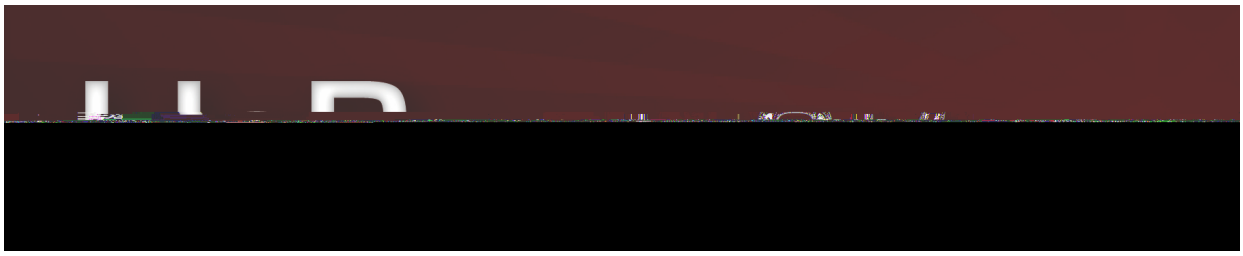
Volume 11 · Number 1 · 2021
ISSN 2157-622X

Affiliates of the *International Journal of ePortfolio*

Association for Authentic, Experiential and Evidence-Based Learning (AAEEBL)
ePortfolio and Identity Conference

Manuscript Review Board

The International Journal of ePortfolio (ISSN 2157-622X) is a Publication of the
Association of American Colleges and Universities.



Volume 11 • Number 1 • 2021

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2021, Volume 11, Number 1, 1-9
ISSN 2157-622X

Using ePortfolio for Team-Based Transformational Learning Experiences in a Health Education Course

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High-impact educational practices, including team-based learning (TBL) and the use of ePortfolio technology, have been demonstrated to support student learning. This project used a mixed-methods, pre- and post-semester design to examine the combined effect of TBL and the use of team ePortfolios as collaborative workspaces in an upper-division, undergraduate Health Education: Theory and Practice course. Quantitative findings show that students experienced statistically significant increases in their health education competencies and confidence working as health educators, over the course of the semester. Qualitative findings illustrate that students found TBL and the use of a well-integrated ePortfolio effective in supporting their skill development as members of collaborative teams and future health educators. Together, these findings suggest that ePortfolios can be effectively used to create shared online workspaces, support TBL, and develop students' skills in many disciplines.

Health Education: Theory and Practice is an upper-division course taken by all Bachelor of Science in Health Science (BSHS) majors at the University of Alaska Anchorage (UAA). Approximately 25% of BSHS students graduate with a Health Educator concentration and seek employment in a health promotion field. Nursing and physical education students also enroll in the course, which is cross-listed to fulfill requirements or serve as an elective for their degree programs. Health Education: Theory and Practice (i.e., Health Education) is the only health education or health promotion-focused class in the BSHS curriculum and serves a vital purpose in training future health practitioners and health educators, many of whom will later pursue the Certified Health Educational Specialist (CHES) credential. The revised course design described in this article was piloted in a class with 28 students from the Bachelor of Science in Health Sciences, Physical Education, and Nursing programs.

Health Education is offered annually. In the Spring 2016 semester, the course was taught in a new way, emphasizing team-based learning (TBL) and the application of theory to improve students' understanding of health education theory and practice. The venture into TBL was new for the department, as was the use of electronic portfolios (ePortfolios) as a space for students to display their project artifacts and to collaborate as a team.

The ePortfolio tool was selected for the course to help students build on prior work, to integrate their academic and experiential learning, and to encourage them to take responsibility for their own learning (Bierer et al., 2008; Hayward et al., 2008). UAA uses a locally branded ("eWolf") ePortfolio system with Digication as a mechanism for students to "integrate learning, showcase [their] work, and reflect on [their] progress" (Academic Innovations & eLearning, 2018, eWolf ePortfolio section). Assessment of student performance relied heavily on ePortfolio technology, with student teams collaboratively curating 10 assignments, using in-class presentations to showcase their interventions on the site, and submitting all artifacts of their health education interventions for grading and storage through the platform.

Literature Review

The existing research on TBL and the use of ePortfolios focuses primarily on identifying the key components of an ePortfolio needed to demonstrate student learning outcomes, as well as integrating the tool in such a way that requires students to think critically, systemically, and practically. This literature connects to TBL by demonstrating ePortfolio as a best-practice for high-impact learning (Kuh, 2008; Watson et al., 2016). TBL in an ePortfolio provides students with a "digital space where [they] compose digital artifacts, negotiate with multiple audiences, and develop digital identities" (Benander & Refaei, 2016, p. 71). As a high-impact practice, the use of ePortfolio for TBL in Health Education focused on assessment and evaluation of artifacts that demonstrated evidence of students' learning and collaboration with the members of their team.

Benander and Refaei (2016) also noted that although "ePortfolios demonstrated a range of learning through the collection of artifacts, . . . instructors also indicated that they wanted the ePortfolio authors to be clearer about their intended purpose for the ePortfolio" (p. 77). Purposefully integrating theory and practice work into a Health Education ePortfolio space provides both a challenge and a benefit to students and faculty alike. New technologies in the classroom are shown to increase the workloads of new users (Cordier et al., 2016). To overcome student resistance around the adoption of new ePortfolio technology, it is necessary

for instructors to emphasize the value of ePortfolio and share best practices for using the tool to meet course learning objectives with students. The practice of aligning course expectations and/or learning outcomes within the ePortfolio is a necessary strategy when implementing ePortfolio for a course. Scholz et al. (2017) noted that "misalignment . . . may detract from the ePortfolio learning experience, yet we must be equally aware that alignment and misalignment do not result unequivocally in successful or unsuccessful experiences for students" (p. 149).

Developing an ePortfolio creates an opportunity for students to build their confidence and competence, as well as demonstrating learning by providing flexibility, cultivating an instructor and peer-supported learning environment, and offering students the opportunity to build self-regulated learning skills (Ciesielkiewicz, 2019). For the course described here, students were encouraged to engage and develop digital learning skills as a group through a technology-based focus. Each team was required to create a group ePortfolio and negotiate a workflow.

The artifacts in the ePortfolio included work from each student team member, presented as a single cohesive product. Brown (2015) noted that "as they negotiate digital spaces, students are not only creating content—they are constructing their ethos using an entirely new set of rhetorical tools" (p. 337), which is evident through the design of group portfolios in the Health Education course that showcased the work done.

Students developing an ePortfolio for TBL purposes build collaboration skills with the potential to transfer from the classroom to the workforce. Students noted that the Health Education course required them to learn "how to collaborate within a team and improve ideas by building off of each other's strengths," echoing Perks and Galantino's (2013) discussion of ePortfolio use in a capstone project for a holistic health minor.

Arntfield and colleagues (2016) identified the value of mentorship and reflective writing-based portfolios to meaningfully engage students in "learning activities through interaction with others and worth-while tasks" (p. 202). Their research focused on the value of student-mentor engagement, but the model can also be used in TBL environments to meet curriculum-based learning outcomes when the artifacts built in an ePortfolio demonstrate "widespread and well-studied curricular innovation made in response to competence-based medical education movement and its associated need for reflective skills in medical education" (Arntfield et al., 2016, p. 203). Using ePortfolio to provide a collaborative workplace for TBL in Health Education expanded the purpose and function of ePortfolio beyond that of an assessment tool for examining student learning outcomes, to support transformative learner experiences that prepare students for practice.

Hastings et al.'s (2014) work with users developing Professional Practice Portfolios (PPP) showed that a sense of accomplishment, experiential learning, skills and accountability, and a best practice were the value markers for students when documenting knowledge through reflection and artifacts in their PPP. Development of a PPP for healthcare disciplines exposed students to leadership competencies and helped them demonstrate organization, accountability, and professionalism. While the authors did not provide additional detail about what might go into a PPP, the Health Education course in this study used ePortfolio to capture artifacts such as presentations, health education videos, health education pamphlets and posters, and research papers related to a chosen health topic.

Using the ePortfolio tool to support TBL allowed the students to work in one tool simultaneously to develop and share artifacts, leading students to develop interpersonal communication, goal setting, and advocacy skills, which will be key to their success in the health workforce.

Pedagogical Approach

As a high-impact educational practice, TBL has shown promise in health professions education (Fatmi et al., 2013; Hall et al., 2012) and was selected as a framework for the revised Health Education course. TBL is a pedagogical method that integrates application-oriented teaching with group learning, inviting teams of students to apply course material through problem-focused tasks, such as the development of health education interventions. Student TBL teams have a stable roster to increase accountability and provide students with the opportunity to practice collaborating, giving and receiving constructive feedback, and having "co-workers" whose performance is critical to completing a task (Haidet et al., 2014; Sisk, 2011). TBL is considered a high-impact educational practice because learners in TBL courses have shown higher self-efficacy and interest in the course, improved class participation, and improved student knowledge of course material and performance (Fatmi et al., 2013; Hall et al., 2012).

ePortfolios were used to collect evidence of student learning and allow students the opportunity to analyze and present their learning experiences at the end of the course. Each team of two to five students created a shared ePortfolio over the course of the semester, compiling all team assignments for the class. At the end of the semester, each team's ePortfolio included a health problem statement, eight health education interventions designed to demonstrate a single theoretical framework (i.e., health belief model or transtheoretical model) per intervention, all the health education materials developed to support those interventions, and a final integrative project.

High-impact educational practices, including TBL and use of ePortfolio, are practices that have been found to reliably increase rates of student retention and engagement (Kuh, 2008). This course's redesign incorporated a pedagogical inquiry focused on exploring whether the use of two high-impact educational practices (TBL, ePortfolio) supported students' understanding of health education theory and practice and their confidence seeking employment as future health education professionals. This effort also built on the themes of authentic learning by incorporating student empowerment through choice of topic, requiring discourse among team members in designing materials and interventions, and providing assignments designed to replicate real world problems and engage team members in the work of Health Educators (Rule, 2006).

The project was approved by the UAA Institutional Review Board as part of a larger Making Learning Visible project under IRB approval #849238-2.

Implementing the Redesign

Health Education was the instructor's first course in implementing the ePortfolio tool, meaning the students and instructor were learning together. The ePortfolio tool was introduced as a space where team members could develop content simultaneously, as well as collect artifacts of their learning. In addition, the ePortfolio tool's design elements provided students with the opportunity to create aesthetically pleasing health education materials, building skills they will need in future practice.

Success with the experiential TBL framework relied on teams organized around common health education interests. Instead of the instructor assigning students to groups—as traditional in TBL—students self-selected into groups around health problems of interest to them, consistent with the authentic learning principle of student empowerment through choice (Rule, 2006). The process of selecting a topic began the first week of class when students worked through a free-writing, brainstorming, and rank-ordering exercise to identify health problems they were interested in. At the second class meeting they shared their "short list" of preferred topics with the class, allowing them to identify students with similar interests and form problem-based teams. Teams chose health topics including childhood obesity, diabetes prevention and management, and intimate partner violence.

The course design emphasized the importance of team-based, experiential learning with an aggressive assignment schedule, including 10 group projects due across the 16-week semester worth 75% of the available points in the course. The proportional assignment of points highlighted the integral relationship between the teams' work product and individual students' ability to earn a high grade in the class. There was a very high workload in this class with detailed assignments due roughly once per week within each team's ePortfolio. The assignment frequency pushed teams to share work, delegate to one another, and build skills to produce health education and promotion materials under resource-constrained conditions, as professional health educators are often tasked to do. It was also important to provide team members with individual accountability, which was done via three structured opportunities for team members to evaluate one another's participation and contributions throughout the semester. The peer assessment process kept the students accountable for their individual contributions and gave them the opportunity to learn from and respond to their teammates' feedback.

The course met twice a week for 75 minutes each day, totaling 150 minutes of class time per week. At the beginning of the semester, the instructor spent one period in traditional lecture/activity instruction activities; teams presented their work during the second 75-minute period. Unfortunately, this pattern hindered rather than helped students, who struggled to find time to meet out of class and were distracted by ad hoc, in-class group exercises. Based on feedback from students, beginning in week four, the instructor limited lectures to 15 minutes per week and the class utilized the other 125 minutes for team collaboration to develop their project work and update their ePortfolio (50 minutes) and weekly project presentations from their completed ePortfolio sections (75 minutes). Shifting how class time was used dramatically improved student learning and satisfaction as measured through in class feedback.

While making space for the teams to engage in inquiry activities and work together to solve real problems was more productive than asking them to spend time listening to lectures or working through exercises, radically shifting the way the course was taught was stressful for the instructor. To assess how the redesign was working for the students, in week eight of the course they completed one forced-choice question asking whether (a) the instructor should spend more time covering material, (b) the instructor should give them more time to work in teams, or (c) whether the status quo was effective. A total of 74% of student respondents selected the option indicating "There is a good balance between time we spend with the instructor covering material with us in class and time to work in our groups," confirming that students felt working collaboratively to apply course material was beneficial to student learning.

It was useful to see that a substantial majority of students participating in the midterm evaluation process thought the course's approach to grappling with novel material struck a useful balance. The

instructor leaned on that reassurance as the semester continued, teaching new material for approximately 15 minutes each week, then loosing the teams to focus on their work together while providing individualized coaching to teams who wanted assistance and answering questions. Student teams made good use of their time together—as demonstrated during their presentations to the class each week—and used their team ePortfolio as a central tool for team collaboration. During each week's presentation, students logged into the ePortfolio system on the classroom computer and projected their team's portfolio to provide the visuals for their presentation.

The final key to making the ePortfolio-heavy, TBL course design succeed was explicitly telling students why they were working in teams and using the ePortfolio tool. There was a great deal of resistance to the idea of group projects at the beginning of the semester, but it softened when the instructor emphasized that one of the goals for the course was to help them learn to work more effectively together because health education and health promotion work are inherently group projects in the real world. Sharing that teamwork was key to carefully developed pedagogical plans, and that the artifacts they created in the team ePortfolio were similar to those they would create as practicing health educators, was crucial to securing student buy-in.

Students benefited from using ePortfolio as a shared collaboration space, where teams could simultaneously work. Students' ability to see their teammates' work as it was being completed and build on one another's work in real time was critical to their productive collaboration. This highlighted each student's ownership of the health education products created and how the skills they were developing would transition to the health education workplace. By using ePortfolio as a tool in conjunction with the TBL course design, students participated in inquiry-based collaboration and developed their skill and confidence as future health education professionals.

Methods

The goal of this evaluation was to examine the effects of TBL emphasizing hands-on learning and the creation of health education products using ePortfolio tools on students' self-efficacy as health educators and their confidence seeking employment as health education professionals.

Sample

28 undergraduate students from the Bachelor of Science in Health Sciences, Physical Education, and Nursing programs participated in this course. Nine participants were male, 19 participants were female (this is a typical gender distribution for upper division health sciences classes at UAA). All 28 participants provided pre-test quantitative data; 25 completed the quantitative post-test and shared qualitative feedback at the end of the semester.

Data Collection

The study used quantitative and qualitative methods and a pre- and post-test design, with data collected in the first and last class meetings. The informed consent document specified students could opt their data out of the research project; no participants elected to do so.

Quantitative Data Collection

Students completed Hopla's (2014) 18-item adaptation of Schwarzer and Jerusalem's (1995) General Self-Efficacy (GSE) scale at the beginning and end of the semester. Hopla's (2014) modified measure centers the GSE around the seven core competencies of health educators derived from the National Health Educator Competencies Update Project (Sharma & Romas, 2008).

The modified GSE includes 18 questions assessing student's self-efficacy around seven core competencies in health education on a 5-point Likert scale (4 = *great*, 0 = *none*). Two example questions are: "To what extent am I prepared to plan interventions for health education?" and "To what extent am I prepared to advocate for health?" The GSE has demonstrated high reliability, stability, and construct validity in the literature (e.g., Schwarzer et al., 1999). Hopla's (2014) modified scale showed an inter-item reliability with a Cronbach's alpha of .83.

For this project, the instructor added two questions assessing students' self-efficacy around employment as health educators: "How confident would you be seeking work as a health educator *today*?" and "How confident are you in your ability to work as a health educator *today*?" These confidence questions used a 0-3 Likert scale, with answers ranging from *not at all confident* to *very confident*.

In addition, each student completed a mid-term course evaluation in week eight of 16, which included one forced-choice question asking whether, "We should spend more time covering material with the instructor and less time working in teams," "There is a good balance between time we spend with the instructor covering material with us in class and time to work in our groups," or "We should spend less time covering material in the class and have more time to work in our teams."

Qualitative Data Collection

Qualitative feedback was collected from students throughout the semester, both in class and via team contribution assessments completed outside of class. The team contribution assessments were done in weeks seven, 12, and 16 (after every three team assignments) to collect substantive feedback from students on one another's contributions to the team's learning and products. In addition, at the end of the semester, students were asked to describe their key takeaways from the course.

The team contribution assessment rubrics had three sections. The first asked each student to rate every member of their group, including themselves, on five components using a 6-point Likert scale: contributions, quality of work, time management, working with others, and commitment. The second asked each student to provide at least one specific comment for each of their teammates and divide 100 points between the members of their team in a way that indicated proportionally how much credit each person should receive. The third asked students to comment on the team's function and learning as a whole; only comments about the team as a whole were reviewed as part of this inquiry. Individual data for each student, including their teammates' comments and assessment of their quality of work, time management, etc., was shared with students at each data collection point and used to determine participation grades for the course.

Data Analysis

Quantitative Analyses

Total scores were calculated by summing the responses to all 20 questions (18 from the modified GSE, two confidence questions). Possible scores ranged from 0 to 78 (all questions have a zero option); competency questions (n = 18) are on a 0-4 scale, confidence questions (n = 2) are on a 0-3 scale. Scores for the seven competencies were calculated by summing the scores to individual questions, then dividing by the number of questions associated with that competency (denominators varied between 1 and 4).

Qualitative Analyses

Qualitative feedback from students assessing their perception of the course and their learning was analyzed using emergent thematic coding and using simple frequency counts to establish the frequency of common words and ideas. The unit of analysis was the individual student. Common themes around skill development and use of ePortfolio emerged across student responses and throughout the semester.

Results

Quantitative Findings

Pretest total scores ranged from 11 to 69, showing students perceived a wide range in their competence and confidence as health educators at the beginning of the semester. Post-test total scores ranged from 27-78; the highest possible score on the measure is 78, which required universal answers of *great competence* and being *very confident*. Because total scores included this highest-possible score, it is important to acknowledge that the measure was range restricted.

Despite the use of a range restricted measure, there was an increase in the minimum score on each competency, mostly from 0 to not-zero. The means for each competency and for students' confidence increased substantially, averaging a 1.19-point increase on a 5-point scale (24% of possible range) for each of the seven competencies and a 0.89-point increase on a 4-point scale for confidence (22% of possible range). Total scores also had a significant mean increase from 36.57 to 59.84 ($\alpha = 0.01$). Further analyses using paired samples t tests to assess whether the change in the means across the semester was significant found the differences were statistically significant ($\alpha = 0.01$) for measure totals and for mean increase of each of the seven competencies and students' overall confidence score.

Of the 23 students who participated in the mid-term evaluation, three (13%) indicated, "We should spend more time covering material with the instructor and less time working in teams"; three (13%) indicated, "We should spend less time covering material in the class and have more time to work in our teams"; and 17 (74%) indicated, "There is a good balance between time we spend with the instructor covering material with us in class and time to work in our groups." It was reassuring to see that a substantial majority of students participating in the midterm evaluation process thought the flipped classroom approach to grappling with novel material struck a useful balance.

Qualitative Findings

Specific themes around teamwork, productive collaboration, and work quality emerged across student responses and throughout the semester.

TBL and Skill Development

All students provided feedback for one another using team contribution assessment rubrics; 19 also provided qualitative comments on the TBL and ePortfolio components of the course. Of the 19 commenters, 18 provided positive feedback (some also identified opportunities for improvement alongside the

positive feedback). The overwhelmingly positive data suggest the ePortfolio-heavy, TBL approach was accepted by students and provided a good learning experience for them. There was a strong focus in their comments on how teams worked together and the authentic work their teams produced in the ePortfolio. The word "work" and its various suffixes (ed/ing) was used 25 times in the 19 student comments. The adjective most used in the comments was "great," which was used eight times in the 19 student comments, in statements like "great group to work with—thoughtful, innovative, and responsible." These findings indicate the TBL approach in conjunction with the ePortfolio tool gave the students the opportunity to develop health education skills, build their ability to collaborate productive, and curate health education products in the ePortfolio tool.

The students identified communication and time management as important skills for team functioning. Some groups also noted room for improvement around these concepts. One example of an overall positive comment that identified an opportunity for improvement and recognized that skill development was taking place is,

> Overall [team name] was a fun group to be a part of. We came together to combat a common health concern. Time management was a bit of an issue at times throughout the semester. This was a good learning process when working with others.

Only one student submitted negative feedback without positive components. The student's comment focused on the mismatch in team members' expectations, specifying that "the other members [of the team] just wanted to get their parts and do just that" versus embracing the collaborative process and additional resources the student offered.

At the beginning of the semester, students were concerned about the amount of group work inherent in the course and the challenge of learning the ePortfolio tool. By the end of the semester, their perspective had changed dramatically. Several students reported in conversation with their instructor that this course provided the best team experience they had ever participated in. This pattern also appeared in the end of semester team contribution assessments, with one student noting, "We got lucky as a group [and] worked really well together." It was not luck though—this pattern is consistent with findings that TBL practices influence cooperative learning and teamwork skills among students (Persky, 2012).

Students valued the TBL experience and indicated that "working through the constructs in a real-life situation made them easier to understand." Communication was a key identified factor of TBL and students indicated the value of communication "forced us to align our thinking and understanding in a thorough manner, so as to present a coherent project" and "how to collaborate within a team and improve ideas by building off of each other's strengths."

Students reported that during the semester they developed skills around teamwork, communication with colleagues, leadership, creativity, planning interventions based on theoretical models, public speaking, and the ability to apply their learning to the practice of health education. One student stated that,

> one of the most valuable things I gained from this semester is the ability to work efficiently [in] a group. I know that these team-based exercises have help me develop group work strengths that I can use in future employment and life in general.

The collaboration and technology skills students homed in this class are applicable to real-life workplace environments, as "you have to adjust to individuals' personalities and work ethic/style, and make it work," and students can draw those connections as they completed their coursework.

ePortfolio

Student feedback on the inclusion of ePortfolio tools in the course was positive. Students expressed verbally that there was a steep learning curve to the tool initially, but by the end of the semester they "love[d] using eWolf as a health education page" and found that "managing information in such a manner that you can provide a clear, concise, and believable intervention outline/plan" made for a transformational learning experience.

Discussion

Quantitative analyses showed a statistically significant increase in students' minimum and mean scores for each of the seven health educator competencies and the competency scale overall. Student's confidence seeking work as health educators also increased substantially, indicating that the authentic, TBL course design successfully contributed to student learning and engagement.

Qualitative analyses provided additional information on how the course redesign served student needs. Students' overwhelmingly positive feedback at the end of the semester supported the hypothesis that the TBL approach utilizing ePortfolio technology was accepted by students and provided a good learning experience for them. There was a strong focus in the students' comments on how well the teams worked together and the high quality of work their teams produced and archived using ePortfolio.

Students' feedback supported the idea that the TBL approach using ePortfolio tools to collaborate and showcase health education products was accepted by students and provided a good learning experience for them. There was a strong focus in the students' comments on how well their teams functioned and the high quality of work their teams produced and archived using ePortfolio technology. Students identified the TBL components of the course as distinct and unusual but did not identify the use of ePortfolio—which was less common in the program's classes—as unique. Instead, the students accepted the ePortfolio as the course learning management system and a foundational tool: its use was so "baked into" the course, that students did not even notice it. This suggests that well-integrated ePortfolio tools are readily accepted by students.

Using the ePortfolio as a tool for TBL clearly demonstrated student group efforts. One student shared, "As much as I wanted things to just get done, I found that it was okay to let off the gas. This allowed for other strengths to shine through and allowed me to see who was actually contributing." The ePortfolio helped students have a better visualization of what efforts were being done by the team as a whole throughout the semester, giving students the opportunity to really learn the value of what it means to work as a team without taking on more than necessary.

The findings from this inquiry highlight students' acceptance of a well-integrated ePortfolio tool as a course requirement and the utility of ePortfolio as a shared, collaborative workspace to support TBL. The Health Education instructor was pleased by the quality of student work and degree of ownership students displayed around their health education interventions. Students demonstrated significant learning and engagement with course material; and the ePortfolios contained such rich artifacts that they have since been incorporated as part of the program's annual assessment activities.

Conclusion

Students enjoyed this course and were proud of the work demonstrated in their presentations and ePortfolios. The course relied on two high impact practices: TBL and use of ePortfolio. This inquiry suggests that the redesigned Health Education: Theory and Practice course incorporating authentic learning activities substantially improved students' perceived efficacy and confidence in their ability to seek work and perform the job of health educators. Students in the class reported positive experiences collaborating with others to create health education interventions and indicated their learning experience supported teaching Health Education as an experiential, TBL course using ePortfolio tools. Based on these findings, the instructor from this pilot and the department as a whole committed to expanding the use of TBL and ePortfolios in the health sciences classroom and encouraging others educating future health education and promotion practitioners to incorporate these practices when possible.

Health sciences faculty members were impressed and delighted by the depth of authentic student learning, as demonstrated through performance on assignments. The grade range was slimmer and skewed higher than in other upper-division courses and no students failed to pass or to succeed in the course. Overall, students in the TBL-framed, ePortfolio-using course earned better grades, relative to other courses the instructor taught, by doing more and richer work than was required in those other classes. In addition, the ePortfolios produced by the teams were impressive in their breadth and depth. The Division of Population Health Sciences has since revised the undergraduate program's annual assessment process to incorporate these artifacts of authentic learning as evidentiary support of student accomplishment toward the program's student learning outcomes, including the outcomes that "graduates of the BSHS Health Educator track will be able to: plan effective health education programs . . . [and] act as a resource person in health education" (UAA, 2020, para. 1; Crowell & Caladmidas, 2016). Building on this new course design in later semesters, the instructor worked with academic technology staff to develop a Health Education course ePortfolio template based on the work of high achieving teams in the class. Since then, another instructor has taken over the course and continues to use the ePortfolio as a tool to support students' TBL experiences.

Strengths

The methods used in this project build on earlier work in the field and offer compelling evidence about the utility of TBL and ePortfolio in the health science field. This inquiry joins a small number of published TBL projects using a pre/post-test design (N = 7 in Haidet et al.'s 2014 meta-analysis), supporting more rigorous evaluation of a curriculum method many are currently employing. The mixed methods approach offered quantitative evidence of statistically significant changes in student confidence and health education competencies, and a qualitative rationale describing how students believed the course components scaffolded their learning.

Limitations

This effort focused largely on students' confidence as future health educators and acceptance of TBL as a pedagogical framework, which limited the ePortfolio-specific data collected. While the methods used for the inquiry are consistent with other research in this area,

this study suffered from range restriction in the modified GSE scale and the lack of a comparison group. It is likely that any health education and promotion course—using TBL and ePortfolio tools or not—would have impacted students' self-reported competence and confidence as health educators. Evidence suggests that the authentic course design choices contributed to a larger increase than a traditional course would have; however, additional work with larger sample sizes and control groups for comparison is needed to show the difference.

Future Directions

The combined use of TBL and ePortfolio offers significant pedagogical promise both within and beyond the health sciences field. Bringing these two high impact educational practices together provides students with opportunities to build collaboration skills and solve real world problems, while simultaneously creating artifacts that persist past the end of the course.

Future research around this topic would benefit from larger sample sizes, systematic data collection around students' perceptions of ePortfolio as a tool to support learning, and comparisons of student performance in courses using ePortfolio with those utilizing other high impact educational practices. In addition, future research on student competence and confidence would benefit from incorporating other, less range-restricted measures and a pre/post/then framework, incorporating a retrospective pre-test, to improve on the pre- and post-test design utilized here.

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each section were provided (see Appendix A). Within this general framework, she was encouraged to record her reflections spontaneously, without a specific sequence or length of entries. The journal entries were analyzed and coded and the main topics were taken up in a structured manner in the final interview, with a time interval of a few weeks in-between.

The interview took place after the completion of the course including final grading and focused on the teacher's perception of the role the ePortfolio assignment played within the entire course and whether or not it had any impact on students' performances in class and final learning outputs. This mix of methods allowed us to capture both the stream of consciousness of the journal entries and the more consolidated end-of-the-course reflection, facilitating a deeper understanding of the ePortfolio use.

Students were surveyed twice, once at the mid-term point after submitting the ePortfolio and again at the end of the course. While the first short questionnaire aimed to capture their immediate reactions after task completion, the final survey (see Appendix B) allowed them to reflect on if and in what way the ePortfolio contributed to their overall learning in this course and possibly beyond within the context of the program. They were also asked about their perceived benefits and drawbacks of using ePortfolios as a learning and assessment method as well as the challenges they encountered in the process.

To complement these methods, we conducted direct observation that was documented by means of an observation diary. Triangulated with the data from the aforementioned sources, the field notes enabled a better understanding of ePortfolio use. The observation model chosen was the complete observer (Kawulich, 2012), as we opted not to actively intervene in the class activities and thus minimize potential bias. Observation took place during three sessions, two sessions with the debate format as the main activity and the last session of the course with a more reflective focus. The observation guide used an event sampling technique (Kawulich, 2012) with notes taken every time the students or the teacher referred to the ePortfolio in class; in these instances, we recorded the interactions and behaviors of participants.

For the purpose of this case study, class observation only provides information on the non-technological aspect of the ePortfolio use, namely on how it is used in connection with class activities and other assignments. To complement class observation, we accessed a random selection of student ePortfolios. We did not analyze the ePortfolios from the point-of-view of content but rather to complement the data collected through the other methods by examining samples of the assignment output. Accessing the ePortfolios revealed information about how students interacted with the online platform and with the course content, their colleagues, and the teacher, given the technological affordances. The observation in two different contexts—in-class and on the online platform—provided interesting insights into the extent to which the two learning environments are interconnected, enabling students to construct and retrieve knowledge throughout the course.

Moreover, we analyzed a series of course-related documents provided by the teacher (e.g., the syllabus, assignment handouts, grading rubrics) in order to gain more information on the course design and to put the ePortfolio into context.

Results

After analyzing the data collected from students and the teacher and based on the literature review, four main themes emerged. We will use them to structure the overview of our research results: (a) ePortfolios as a tool for integrative learning, (b) ePortfolios as a space for independent learning, (c) the technological affordances of ePortfolios in connection to learning, and (d) the role of the ePortfolio within the course. For each theme, we provide both the students' and the teacher's perspective.

ePortfolios as a Tool for Integrative Learning

This rather broad theme can be broken up into several sub-themes: ability to make connections, deep learning, analytical and critical thinking skills, reflection, and continuous learning. AAC&U's (2009) integrative learning rubric provides five elements that can be assessed in the context of integrative learning: (a) connections to experience, (b) connections to discipline, (c) transfer, (d) integrated communication, and (e) reflection and self-assessment. All of these topics support the idea of the ePortfolio being valuable both as process and as outcome, as it plays the role of a meta-tool for learning. For the teacher, this goes to the core of one of the learning objectives: becoming an Asian country expert and demonstrating critical understanding of the most important issues in development studies. The ePortfolio format enables her to test all the aforementioned skills in a more authentic way than a traditional essay. Moreover, it allows her to monitor and assess students' learning process:

"Learning is a process of accumulating knowledge gradually and updating ePortfolio each week before the session is such a knowledge accumulation process."

The students, for most of whom this was the first ePortfolio experience, acknowledged that this new format facilitated a more integrative approach to learning. One student said "The ePortfolio was very useful in making us think about development holistically" by providing the necessary support and scaffolding. It also offered a framework for a crucial objective of political science studies—linking theory and practice—as one student remarked, "The country assignment was useful to move away from pure theory and analyze individual countries. It really focused us to think beyond our readings." This supports the second element of the AAC&U rubric: connection to discipline. As it spanned several weeks of the course, in contrast to a one-off written assignment, the ePortfolio task allowed students, as one individual mentioned, "to think about each lesson meaningfully." By analyzing some of the ePortfolios, we observed signs of student progress throughout the process and confirmed by the teacher in her journal.

While not at the core of students' perception of the task, reflection was also mentioned as a benefit of this approach; for example, one student noted, "It's a different style of assignment and it allows us some reflection on the topics we found most interesting." By developing their ePortfolios, students also felt this method enabled them to delve deeper into the topic. One student said, "it forced me to keep track of the concepts while contextualizing them within one country," while another believed that the ePortfolio assignment was "more successful at giving us long-term memory and learning than an exam." This echoes the fifth element of the AAC&U rubric: reflection and self-assessment.

Also, a peer review feature was integrated in the assignment as part of the ongoing learning process, as the teacher believed ePortfolios are "the very foundation for the creation of a collective and peer learning space." Initially planned towards the end of the task after students became familiar with the environment, it soon became clear that the peer review exercise would be more effective at an earlier stage and possibly multiple times, as it allowed students to interact with each other's work and practice giving and receiving feedback.

ePortfolios as a Space for Independent Learning

This second theme confirms one of the well-established roles of ePortfolios, that of a space for self-directed learning. From the teacher's perspective, "the concept of ePortfolios as personal learning spaces which enable students to visualize their own learning path" was at the core of her learning design. She combined it with the idea of letting all these independent spaces flow into a "collective learning space whereby everyone including the instructor learns from each other." The ePortfolio task captured the value of having students explore by themselves the topics from the perspective of the country of their choice before discussing them in class. The teacher remarked, "a thorough understanding of the theories has to be grounded in specific countries and a lot of learning has to be done by the students in their own time through country specific study." Moreover, it is worth noting that throughout the duration of the assignment, she thoroughly monitored and, when necessary, reacted to the students' ePortfolios in order to create a smooth transition between the online and offline, personal, and collective environments.

When asked about the value of the ePortfolio for their learning in this course, seven out of 10 students ranked independent learning and personal learning space the highest, aforementioned features such as reflection, making connections, or deep learning. This points to the fact that the students appreciated having a personal, more informal space where they had the freedom to address the topics in their own manner, more creatively. Although it involved a higher workload, this aspect, often missing in the study of political science even at the postgraduate level, is perceived by students as an important vehicle for self-development in terms of both knowledge and skills.

As an integral part of the independent learning space, skills acquisition and training is also an important aspect of this course. Besides the analytical and critical thinking skills already mentioned in the first theme, writing and public speaking skills were also reflected in the ePortfolio assignment, linking back to two of the elements in the AAC&U rubric: transfer and integrated communication. Although not all students were familiar with the format, similar to blogging, they appreciated the opportunity to train, as students noted, "writing informed opinion pieces less formally" and "presenting a lot of information into a more concise manner . . . telling a narrative in a creative and engaging way." The difference in style was also noted by one of the students who acknowledged that "translating academic literature into a more general piece that mainstream audience can easily understand" is a useful skill to have for the future career.

The Technological Affordances of ePortfolios in Connection to Learning

Intrinsically linked to the previous two themes, the technological affordances of the ePortfolio are also closely connected to the course design as well as students' performance on the task. From the teacher's point of view,

the digital aspect of the ePortfolio played a crucial role in the way she structured the course as well as her choice of teaching approach, which she described as "flipping the classroom": "Through reading ePortfolios, I gain understanding of student learning process and can re-purpose in-class time for inquiry, application, and assessment that better meets the needs of students and addresses their problems." Through its inherent features, such as multimodality and hypertextuality, the digital learning environment facilitates the use of ePortfolios as integrative learning tools as well as personal learning spaces, as seen previously. Arguably, this can enable designing certain learning activities that are otherwise inconceivable, pointing towards a higher order level of technology integration according to the SAMR model.

The majority of the students felt that the multimodal nature of the ePortfolio assignment enhanced their learning by proposing a "refreshing," "less formal" approach, allowing them to "think more creatively." However, some limitations linked to the task design were pointed out; for example, one student noted, "Having to use different media, especially video and podcast, was actually more of an additional pressure and didn't really help. Some topics or some countries just don't have enough available multimedia input." Striking a balance between a rigorous assignment structure and providing students with enough freedom and flexibility to make the most of the technological affordances of their personal learning environment seems to be the key for an effective use of ePortfolios, as already acknowledged by the existing literature (Meeus et al., 2006).

As the institutional LMS (Moodle) offered no integrated ePortfolio solution, the teacher decided to use WordPress, which was recommended by a colleague for being "free and relatively easy to use." She added, "I use WordPress to create my personal professional website and I am familiar with it." While most of the students felt comfortable using the online environment, for some of them, gaining familiarity with the platform proved to be an obstacle in the task delivery and added to the already high workload; one student noted, "Spent too much time trying to figure out WordPress." The flip side of the coin is that students acknowledged the assignment enabled them to learn web design skills, which was not an objective of the course but appears to be a positive consequence of having students engage with technology in their learning. The increase in students' digital literacy was confirmed by the teacher in the final interview. Indeed, most of the ePortfolios accessed for our research showed a good understanding of developing content in a digital environment.

The Role of the ePortfolio Within the Course

The course was designed with the ePortfolio playing a central role in its overall setup. Its timing—during the first half of the course—and its function as a space for independent learning point towards a close connection with the other learning activities. Even though the ePortfolio represents just one of the course assignments, worth 30% of the final grade, "it enables students to analyze literature and evidence on the specific topic about their Asian countries . . . to be used later when they start to write the research paper," as the teacher noted in the first part of her journal. Thus, "ePortfolios form the very foundation for their performance in other tasks throughout the course." What that means in practice is that she referred to the ePortfolios often during the sessions and prompted students to reflect on how their weekly research related to the day's topics: "Sometimes, students would be called upon to tell their classmates the key findings of their ePortfolio entries. Sometimes, I will also point out some interesting findings from ePortfolios and ask them to elaborate." This corresponds to the data gathered during class observation in the second part of the course, where students were engaging in class discussion based on the expertise they had built through the ePortfolio. Moreover, as the teacher reflected later in her journal, the ePortfolio proved to be a very useful tool of collaborative knowledge building, or co-creation, and thus an effective way to keep students motivated: "Reading their ePortfolios before each session also equips me well with country-specific knowledge and I can better structure the discussion." She furthermore admitted that she "would not have been able to come up with these detailed challenges and solutions" without the input from students' independent work.

Students acknowledged the close links between the ePortfolio assignment and the other aspects of the course. They especially noticed that the research put into the ePortfolio enhanced the quality of class interaction; for instance, one student stated, "[the ePortfolio] adds considerable value to class discussion because everyone came prepared to discuss the topic." Other students also recognized the connection with the final paper, which indicates the internal alignment between the different assignments and the course objectives: "It is also excellent preparation for the research paper and the two make a good pair." This is also reflected in terms of workload, with most of the students recognizing that the comparatively high workload for the ePortfolio task helped reduce the effort necessary for the final paper: "The workload was more than will probably be spent on my essay—but on the other hand the essay uses a lot of the information collected during the ePortfolio process."

Looking at students' overall learning outputs after assessing the research paper, the teacher acknowledged a clear link between the ePortfolios and students' performance in the other assignments, especially the final paper, as well as their engagement in class. She noted that the students with a good ePortfolio were able

to achieve a higher level of analytical, critical, and reflective thinking in their research paper, as they had already completed the evidence collection stage using the ePortfolio. Moreover, they were more active in class discussions, willing to contribute their knowledge but also very interested in learning about their peers' research. Thus, the assumptions made during course design that the ePortfolio would represent an essential building block in the overall course structure seem to be confirmed by students' performance.

Discussion: Towards a Model of Using ePortfolios in Political Science

Two main themes emerging from the research results are worth bringing forward for discussion in order to answer our research questions: (a) the role of ePortfolios as hybrid (individual/collective) learning spaces in political science and (b) the level of technology integration achieved using ePortfolios. The ideas discussed will then be taken forward to the instructional design level where we develop a model for teaching political science integrating an ePortfolio approach.

The Role of ePortfolios as Hybrid Learning Spaces in Political Science

As outlined in the existing literature and confirmed by our case study results, the most valuable contribution brought by the ePortfolio is its role as a new, hybrid learning space, between individual and collective learning and, as such, as a suitable formative assessment method. The process aspect, in which the ePortfolio helps strengthen students' overall course performance, reveals itself as more relevant than the final output (i.e., ePortfolio as a product, a collection of artifacts as is the case in creative disciplines). One can conceptualize the ePortfolio in the context of political science as a "sandbox," an environment where students have the freedom to explore various types of learning experiences in a personal way. In a discipline where mostly traditional teaching methods, such as lectures and seminars, are used (Blair et al., 2007), the use of ePortfolios enables students to personalize their learning and to build knowledge in a creative manner together with their peers. The key role of the teacher is to scaffold this process, while not impinging in students' ownership, and provide the necessary guidance and formative feedback as well as facilitating peer feedback and collective knowledge building.

Because of this intrinsic developmental function of the ePortfolio, summative assessment, while possible, does not appear to be the optimal solution; as it requires rigorous grading criteria, it often limits the teacher's freedom in designing and evaluating the task as well as students' creativity. To balance the lack of a specific grade and to keep students motivated, the links among various activities and assignments as well as their alignment with the learning goals need to be made explicit. In this context, the ePortfolio could be assessed as an integral part of a larger task, such as a research paper, like in our case study. Alternatively, the ePortfolio could be extended to be the largest assignment of the course, including smaller, concrete tasks that relate either to knowledge or skills and for which grading is a more straightforward process.

The results of our research, backed by existing literature, emphasize the crucial role of learning design in enabling the intrinsic ePortfolio features to make a difference in the learning experience by facilitating the coexistence of the individual and the collective learning spaces and blurring the lines between online and offline environments. As with many other technology-supported tools, their transformative power should not be taken for granted; their effective use is strongly dependent on the capacity of the teacher to design learning activities whereby technology supports learning and does not distract from learning.

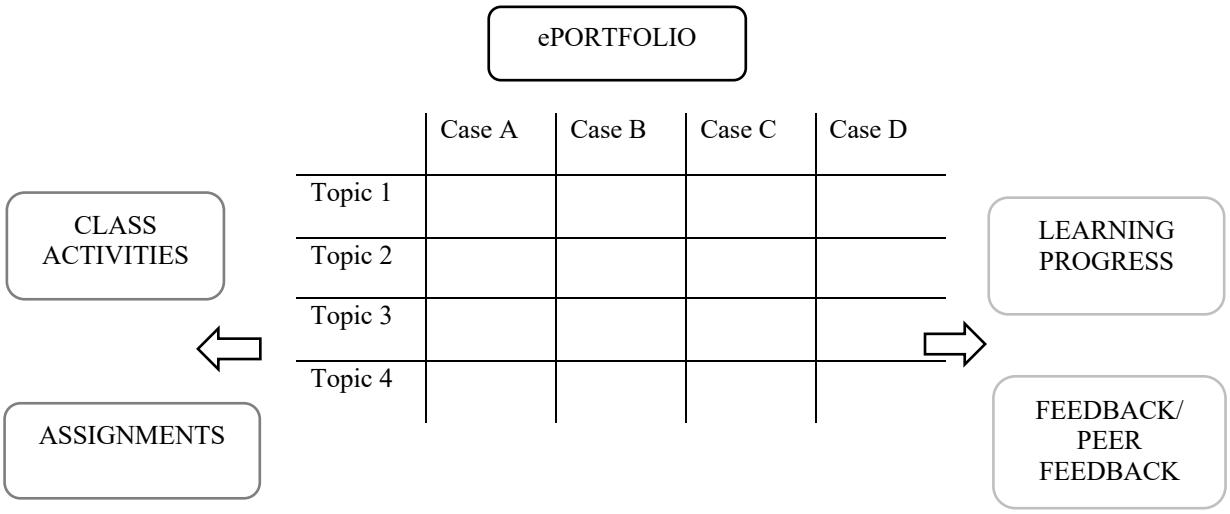
The Level of Technology Integration Achieved Using ePortfolios

Evaluating the ePortfolio as a technology-enabled teaching and learning tool, we wanted to establish if its use can be placed at the transformation levels of technology integration, as proposed by Puentedura in the SAMR model (i.e., modification and redefinition). The ePortfolio tool, as used in our case, enabled the teacher to develop a course design that could not have effectively been put into practice otherwise to serve the learning objectives. The core of her teaching approach was to create an interface between the individual learning environments (mainly online) and the collective learning space (in the classroom).

The weekly ePortfolio entries served an important purpose: they allowed students to visualize their learning process while being consistently prepared for class, and they supported the teacher in preparing and constantly recalibrating the class to best suit the learning needs and overall course goals. Moreover, the ePortfolio acted as a framework for class interaction and collaborative knowledge building; with each student being "the expert" in one country, the teacher could design and organize class activities in a more effective and inclusive way by enhancing the potential for exchange and peer learning.

When asked about using ePortfolios in the future, this was the aspect she mentioned she would like to strengthen by planning more structured types of interaction on a more regular basis. Based on the previous consideration, the teacher placed her experience with the ePortfolio at the redefinition level

Figure 1
ePortfolio Model in Political Science



on the SAMR scale, as it facilitated a smooth transition between the personal and the collective, the online and the offline learning spaces. Moreover, she mentioned this was her first experience of meaningful technology integration in teaching.

Instructional Model and Recommendations

Our research focused on one master level course with a small number of students, which makes it difficult to generalize the results. Even though the data collected from both teacher and students provided valuable insights into the role of the ePortfolio, in order to thoroughly evaluate this tool and the learning experience it facilitates one needs to conduct research at larger scale, including a variety of course designs. Moreover, a research design using control groups can provide more accurate results of the impact ePortfolios have on learning.

Nevertheless, the data collected through our case study can support us in attempting to transfer the results into an instructional model for using ePortfolios in political science courses. Our research suggests that the ePortfolio approach can bring most added value in course designs based on a comparative methodology whereby students are asked to collect evidence from a variety of cases such as: Comparative Politics courses, where each student can focus on one country, or International Relation courses, where students can choose to research a specific organization or actor.

To provide substance and structure to the ePortfolio, the entries are linked to the main themes or topics that constitute the building blocks of the course content, usually the equivalent of the sessions in the syllabus. Based on the students' independent work, the class can take different formats whereby the knowledge from the ePortfolios is retrieved, collated and compared. The combination of independent and collective knowledge can be used in various class activities like role plays and debates. Moreover, the ePortfolio can be an assignment in itself or it can be connected with other assignments such as research papers or projects (see Figure 1). It is important to remember that the main value of the ePortfolio in this context is the ability to mirror the learning process, thus providing the students with a useful reflection and self-assessment tool and the teachers with an insight into students' learning progress.

This model can provide answers to some of the challenges of teaching political science by: (a) engaging students in a coherent and sustained way in collective knowledge building; (b) facilitating integrative learning by enabling students to make connections between theory and practice and (c) providing them with a space for independent learning where they can also train their information and digital literacy skills.

Conclusion

By analyzing the use of the ePortfolio in a political science course, this article aimed to contribute with a different disciplinary perspective to the already extensive literature focusing mainly on teacher education, medical studies, and creative disciplines. Our case study, including both the teacher's and the students' perceptions, confirmed the value of the ePortfolio as a space for independent learning and at the same time as a tool supporting integrative learning, thus

answering some of the main challenges of teaching political science. Technology has the potential to not only enhance but transform the learning experience, by enabling a course design that blends independent inquiry and collective knowledge building. However, our research results indicate that learning design plays a crucial role in using this potential to the benefit of students' learning. In this respect, the teacher is in the position to shape and design learning environments that use the affordances of technology but have the quality of the learning experience at their core. As presented in our instructional model for political science, ePortfolios can be used to facilitate various inquiry and evidence-based pedagogical methods, providing on the one hand structure and diversity to the class and on the other hand a meta-tool for learning that allows students to visualize their learning progress and teachers to better adapt to the learners' needs.

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Appendix A
Teacher Journal Guidelines

Journal	Timeframe	Reflection prompts
Part 1	Course design	GENERAL ABOUT THE COURSE • A brief introduction to the idea of the course (how you got it, how you planned it) • The learning objectives of the course • How you designed the learning activities (explain briefly what the various activities are, how you envisage the sessions) • How you designed the assignments ABOUT E-PORTFOLIOS • Why you chose e-portfolios: any inspiration? For what learning objective(s)? (always think in terms of knowledge AND skills) • Any prior experience with that? • How did you design the e-portfolio assignment specifically? i.e., using specific questions for each entry, clear specifications in terms of length, workload expected, etc. • What platform are you using for the e-portfolio? Have you used that before? • What are your expectations from the use of e-portfolios? • What do you think can be the challenges in using them? • How do you plan to assess them? Do you think it will be more difficult/ time-consuming than with other types of assignments? • Do you plan to offer students feedback on them? LINKS BETWEEN EPORTFOLIOS AND REST OF THE COURSE • Are the e-portfolios linked (explicitly) to the other parts (and other assignments) of the course? • Can then contribute (implicitly) to the students' performance in other tasks throughout the course?
Part 2	While assignment is ongoing	Reflecting on the period when the assignment is ongoing • Students' initial response to it • Any further reaction, questions, concerns that you noticed • Engagement with the assignment (i.e., weekly task, presentation, etc) • Any other preliminary observations (maybe some collateral outcomes you were not expecting?)
Part 3	While/ after grading assignment	Reflection on the overall assignment • Overall student performance • Your satisfaction with it, by comparison to your initial expectations • Strengths and weaknesses of this particular format in light of your learning objectives (this is the *immediate* reflection, we will go deeper on that in the end-of-course interview) • Do you think the students understood the assignment in an appropriate way? • Any challenges you noticed or students told you they were facing when working on the e-portfolios? • Did you notice any change in their level of knowledge and/ or commitment to the course after they completed the e-portfolios? • Any other things you noticed that you did not initially foresee but you think might be linked to the assignment? • Has the assessment process been more difficult and time consuming than in the case of other types of assignments and in comparison to your initial expectations?

Appendix B
Survey on the Use of ePortfolios in the Course "The Political Economy of Development in Asia"

1. Did you have any **previous experience** with e-portfolios?

Yes	
No	

2. Were the following aspects of the assignment made **clear** to you from the beginning?

	Not at all clear	**Somewhat clear**	**Sufficiently clear**	**Very clear**
Objectives of the assignment				
Instructions on how to approach the task				
Assessment criteria for the assignment				

Comments

3. Please evaluate the usefulness of the following aspects:

	Not at all useful	**Somewhat useful**	**Sufficiently useful**	**Very useful**
Guidance provided by the teacher **throughout** the task				
Feedback provided by the teacher **at the end** of the task				
Peer review exercise				

Comments

4. Did you feel comfortable using the e-portfolio **tool** (WordPress)?

Yes	
No	

Comments

5. What **skills** did the e-portfolio assignment help you develop?

6. Do you think the fact that you could **use different media** in portfolios helped enhance your learning? (as opposed to an essay assignment)

Yes	
No	

Comments

7. How would you evaluate the **workload** required to fulfil this assignment? How does it compare to other assignments (in this course and in other courses)?

Less work than for other assignments	Same work as for other assignments	More work than for other assignments

Comments

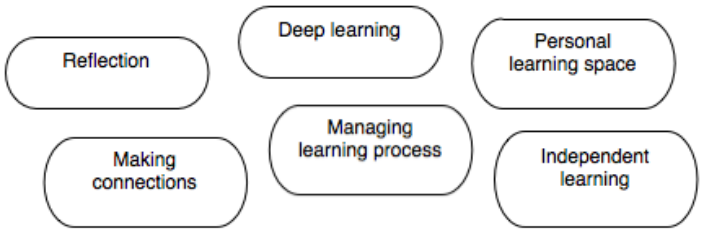
8. Please comment on how you think the e-portfolio assignment **links to the rest of the course** (learning goals, content, other tasks). Does it **add value** to it? How about the link to other courses?

9. Did you face any **challenges** on fulfilling the e-portfolio assignment? If so, please give some examples.

10. What do you perceive to be the **benefits and the drawbacks** of using this assessment method?

Benefits	Drawbacks

11. Please **reflect on the personal learning value** of this assignment. Order the following e-portfolio related actions/features according to **their value for your learning:**
(1 = *most important*, 6 = *least important*)



12. Please evaluate your **overall experience** with this form of assessment:

Not at all satisfied	Not so satisfied	Somewhat satisfied	Very satisfied	Extremely satisfied

Do you have any further **comments** or **suggestions** on whether/how e-portfolios could be used in the future?

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2021, Volume 11, Number 1, 25-52
ISSN 2157-622X

Electronic Portfolios: Research Site in Internet Spaces

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In the mid-1990s with the birth of internet-based web technologies, ePortfolios emerged as a powerful tool in the institution of education. They are positioned within the online activities of courses and programs of universities, which are a subset of internet learning spaces. These interactions are located virtually on the internet and foster the development of various subcultures as demonstrated by graduate students completing their ePortfolio projects as a manifestation of internet culture. This paper reports on an ethnographic study conducted in three iterations of a capstone ePortfolio project course in a fully online post-secondary institution in western Canada. It also presents the interconnectedness of ePortfolios with the four constructs that underpinned my four years of online observation as a doctoral student in my role as a participant-observer of master's students in the final course of their program of studies. The findings based on the rich data collected on the perceived experiences of master's students offer stimulating discussion on the implications for future scholarship and research on ePortfolios as disruptive pedagogy for blended and online learning spaces.

Our ability to connect electronically through World Wide Web tools on the internet since the early 1990s has given rise to new forms of community (Kirmayer et al., 2013), where the members, as "citizens of the internet," establish a sense of collectivity and belonging (Porter, 1997, p. xiv). ePortfolios, which emerged as a powerful tool in the institution of education with the birth of web technologies, have become a key aspect in curriculum updates and are gradually being considered research sites in spaces of the internet. In my study, the ePortfolio is a reflective, curated repository that is then mediated through interaction with instructors and peers in spaces on the internet. It is a technology-enabled learning site where master's students in a fully online post-secondary institution in western Canada reflected and documented their learning growth over time during the final course in their program of studies.

As illustrated in Figure 1, ePortfolios are positioned within the online activities of courses and programs of universities, which are a subset of internet learning spaces. These online activities within a course and also across disciplines are located virtually on the internet and foster the development of various subcultures. In my study conducted in three iterations of an ePortfolio course in a graduate program at a fully online university, students completing their capstone ePortfolio projects gravitated toward a locus, an ePortfolio subculture as a manifestation of internet culture.

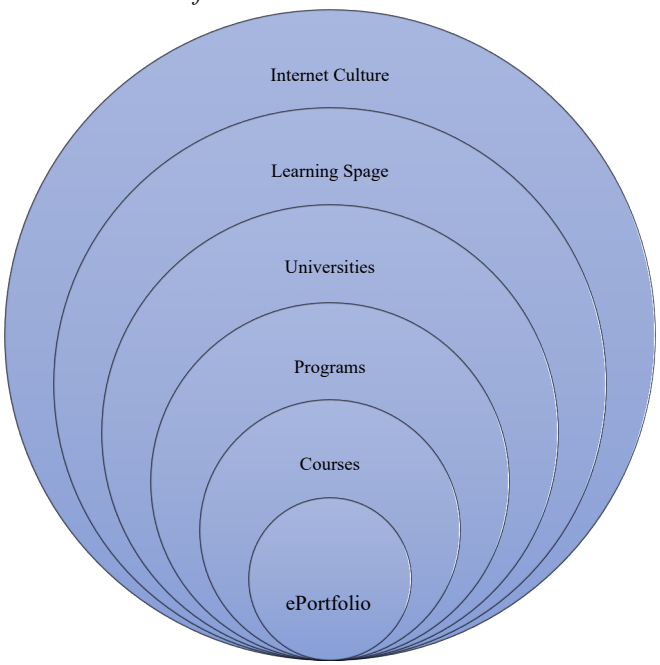
Community of Learners in Spaces of the Internet

In spaces of the internet, there are cultures and subcultures characterized by how we act, interact, and present ourselves (Kirmayer et al., 2013; Porter, 1997). The students in my study became part of a subculture which, as Foster (1997) described, is characterized by the sharing of common goals and the relationships the group generates and nurtures during the interactions originated among peers. These interactions, located virtually on the internet, foster the development of various subcultures and make it possible for online researchers to engage in meaningful observations of online learning communities.

Communities are comprised of actors who share a particular interest and engage in a similar activity; they are formed in different spaces, for various reasons, and their members share common goals during either a temporary or prolonged period of time. During my observations of master's students in an ePortfolio learning community, the members shared a sudden desire to search for more information and to produce new ideas (Dewey, 1938) both in the initial stages of the ePortfolio production and also after comments were made by peers on their product. Although part of a natural learning process, this strong feeling from within presented itself, as Siemens (2006) posited, to those able to speak into the process—the ePortfolio process. As the student ePortfolios (initially as products) were taking shape in the early stages of each of the capstone courses I observed, students articulated their difficulty in having to select only five artifacts for their ePortfolio collection. The emergence of a common goal during these preliminary social interactions among community members helped create a sense of community building, as members sought one another for further clarification on how to build the collection. In consequence, the difficulty in discerning which five experiences to include in their projects became the focus point in community gatherings during the weekly online information sessions.

Once the students started sharing their individual collection of pages in the community foyer (course forum), a new community goal emerged; in consequence, the members of this online learning community began to seek comments from peers on the products they were creating. This community, initially devoid of members, purpose, or defined space, was gradually being built by its architects—the students themselves. A certain commonality was now established, and the initial difficulty in discerning how to populate the collection of pages was then overcome. The

Figure 1
ePortfolio as an Internet Subculture



community builders now sought comments from one another on their creations in order to complete their projects and also, most importantly, to further reflect on the "aha!" and "oh, no!" moments experienced during course assignments throughout their programs of study.

As a subculture of a much vaster space in internet culture, the ePortfolio site is a place where students learn to interact with one another, thus building, maintaining, and strengthening a community. Bruner (1996) referred to these efforts as being aligned with a "subcommunity [that] specializes in learning among its members" (p. 20); these subcommunities seem to become a locus where students interact and help one another acquire various forms of knowledge to facilitate the development of their projects. As such, the students begin to experience, as purported by Wiggins and McTighe (1998), knowledge of self, which may then strengthen the ability to explain, interpret, apply, and empathize as well as have perspective of what they understand during the feedback interactions.

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The field of teacher education has been ahead of other fields in adopting ePortfolios, and, as Butler (2006) suggested, continues to grow and advance in its thinking about and the use of ePortfolios. Since the mid-1990s, with the invention of the Web, we have seen a shift in teaching and learning paradigms which are partly underpinned by technology-enabled learning tools, among which is the ePortfolio—now seen as disruptive pedagogy in blended and online learning spaces (Zuba Prokopetz, 2019b). During these educational change processes, in order to avoid a technology push, it is crucial that the perspective of both learner and educator be considered; therefore, a solid foundation in the preparation of student-teachers is necessary (Aalderink & Veugelers, 2006).

In my perspective, technology and pedagogy have undergone a similar trajectory—from the 20th-century, one-way interaction (teacher as the knowledge holder) to the sharing of information and co-construction of knowledge in a community of learners in the 21st century. In the mid-1990s, consumers of knowledge passively received information via the commercialized web (i.e., Web 1.0). In early 2000s, the ubiquitous web (i.e., Web 2.0) capacitated the generation and dissemination of information by consumers, who had opportunities to interact in the vast spaces of the internet. After 2005, with the semantic web (i.e., Web 3.0), information began to be disseminated based on preferences; technological advances made it possible for computers to interpret such information in order to satisfy consumer request. In consequence, the field of blended and online learning evolved accordingly:

- One-way interaction (teacher centric): correspondence, radio, television
- Multiple-way interaction (collaborative): web-conferencing tools

The one-way interactions via correspondence or radio were transformed during the industrialization of distance education (Peters, 1988) in the 1900s, when institutions mass produced study packages for the consumers.

In the late 1980s, with home computers and proper connectivity, the expectation from consumers also evolved, thus requiring some adaptation by the craftsperson in charge of sharing knowledge. The world of online learning during the fourth generation of distance education (Taylor, 1995) transformed when the web made affordances for educational technology pedagogy, which included portfolios in a digital format. These innovative online instructional tools facilitated learning at a distance and enabled students to no longer rely on the efficiency of an assembly line for their study packages (Byrne, 1989; Taylor, 1995). Nowadays, at one end of the spectrum, we have educators who have failed to recognize the advantages of including pedagogically-sound innovation in their practice. On the other end, we have eager learners who want to rely on innovation to both learn and demonstrate achievements, as evidenced in the student development and presentation of their ePortfolios.

A report published in Dublin (Scully et al., 2018) that aligns ePortfolios with learning, assessment research, policy, and practice in education makes a number of recommendations and includes the need for more studies with a robust methodology that enables the triangulation of outcomes—the alignment of competencies on the artifact— with the self-reported attitudes and perceptions of ePortfolio creators (Bryant & Chittum, 2013). My four-year observation of graduate students completing their ePortfolio projects enabled me to capture their struggles as they attempted to align program competencies with their learning in each of the courses in their program of studies. My research focus, however, was on reflection (self-reflection) and feedback interaction (peer-to-peer reflection) during the development of a capstone project that included seven pages, five artifacts, the alignment of core competencies (and their respective sub-competencies), and student reflection on the learning to date.

As a subset of internet learning spaces, process ePortfolios have emerged as a powerful tool in the institution of education. This type of ePortfolio can be applied in both assessment for learning (e.g., active learning, self-regulation) and assessment of learning (e.g., strategies to demonstrate learning) and can be included in the curriculum (re)design of various disciplines and fields of study in higher education. As demonstrated in my online ethnographic study, the student ePortfolio projects are positioning themselves as future research sites in spaces of the internet.

Research Site in Internet Spaces

In the field of education, it is not uncommon for practitioners to apply what they know about a concept before more research findings on that concept are made available (Bryant & Chittum, 2013). Therefore, before we introduce new technology in our practice, we need to ensure that pedagogy precedes technology to prevent our initial enthusiasm from translating as a "silver bullet" or a quick fix in our practice (Bryant & Chittum, 2013; Watson, 2012). As an educator of English as a second language (ESL), I deepened my understanding of my experiences as an ePortfolio creator and user before I attempted to implement this innovative pedagogy in my practice (Zuba Prokopetz, 2019a, 2018b). In order to learn more, I embarked on a 4-year journey in which I was initially an observer and later also a participant in various communities of master's students completing their capstone projects as a manifestation of internet culture in a fully online post-secondary institution in western Canada.

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It was while observing graduate students developing their capstone ePortfolio projects that I perceived the difficulties they had thinking through their learning to date, struggles in aligning competencies with learning experiences, and challenges while articulating their achievement of competencies. As I initially maintained an etic view during my observations, I aimed to focus on what the community members did rather than on what they said they did, as suggested by Margaret Mead, when she suggested, "What people say, what people do, and what they say they do are entirely different things." I began to compare the ePortfolio process (the reflective element) and product (the chosen platform) with an ethnographic approach to research.

Research Questions

My research questions were borne from the observable communications between students in the course and their communicated struggles with the capstone ePortfolio project. The questions are:

1. What are the overall perceptions of the development of reflection in an online ePortfolio project by master's level students participating in a capstone project as an instance of internet culture?
2. What value do students perceive in the reflective process as they develop their capstone ePortfolio project?

3. To what extent does the giving and receiving feedback provide students with a sense of being part of a subculture of an online community of learners?
4. How do students perceive their experiences as peer-feedback givers in the development of reflection as they participate in an online master's capstone ePortfolio project?
5. How do students perceive their experiences as peer-feedback receivers in the development of reflection as they participate in an online master's capstone ePortfolio project?

These questions formed the two layers of the study. The first layer raised Questions 1 and 2 about reflection. The second layer explored peer-to-peer interaction through Questions 3, 4, and 5. Answers to these five questions were pursued through a suite of data collection techniques comprised of (a) direct participant observations as recorded in a reflective journal, (b) recordings of 21 student presentations of their ePortfolio projects, (c) questionnaires with closed- and open-ended questions with six participants (Appendix A), and (d) semi-structured interviews with open-ended questions with the same six students (Appendix B). My reflective journal and personal notes were a rich data source on which I relied to reduce the influence of my perception (and personal bias) on my interpretation, and possible impact on my relationship with the students.

Research Instruments

In order to address the research questions and triangulate the findings, data were drawn from various sources: (a) questionnaires with open-ended and closed-ended questions, (b) semi-structured interviews, (c) recordings from student ePortfolio presentations, (d) reflective research journal with personal notes, and (e) field notes. Since the courses were live, I wrote my reflective notes after each visit to the community which, after ethics approval, became part of the study fieldnotes and research journal. My notes were archived in a collection of pages in my own ePortfolio where I documented my doctoral program of study from orientation to final dissertation defense.

These notes were a product of my ongoing participation in three iterations of the course via the discussion forum, ePortfolio pages, and synchronous information sessions. They also included excerpts of my discussions with my supervisor during moments of awareness and discernment throughout my research process. Some of my notes were organized as journal passages (reflective and reflexive) and others as field notes. Combined, they were of great assistance to me during my analysis and interpretation of the student responses.

The questionnaires were administered by email and included open-ended and closed-ended questions. The closed-ended questions were tallied and reported by number of responses to a given answer's option and not by percentages since the sample was small and not generalizable. The semi-structured interviews, originally scheduled as synchronous meetings via Skype, were eventually conducted by email. The participants were provided with the full list of interview prompts and given the option to choose which questions to discuss during the interview (see Appendix B).

Written student responses to the questionnaire and interview questions were emailed to me by the six study participants themselves. Audio recordings of 21 student presentations of ePortfolios were captured using the Adobe Connect recording function.

Emerging Challenges

One challenge in the data collection and analysis phase was addressing how to access the data within the Adobe Connect audio recordings of the students' final presentations of their ePortfolios. A technologist from the host institution converted the original Adobe Connect recordings into MP3 format. I was then able to import that file format into the data analysis software. I uploaded the student recordings to NVivo Transcribe, where each one-hour of data took only half the time to transcribe. I reviewed and corrected errors in transcription of several passages and returned to the recordings to verify the accuracy of my transcribed notes.

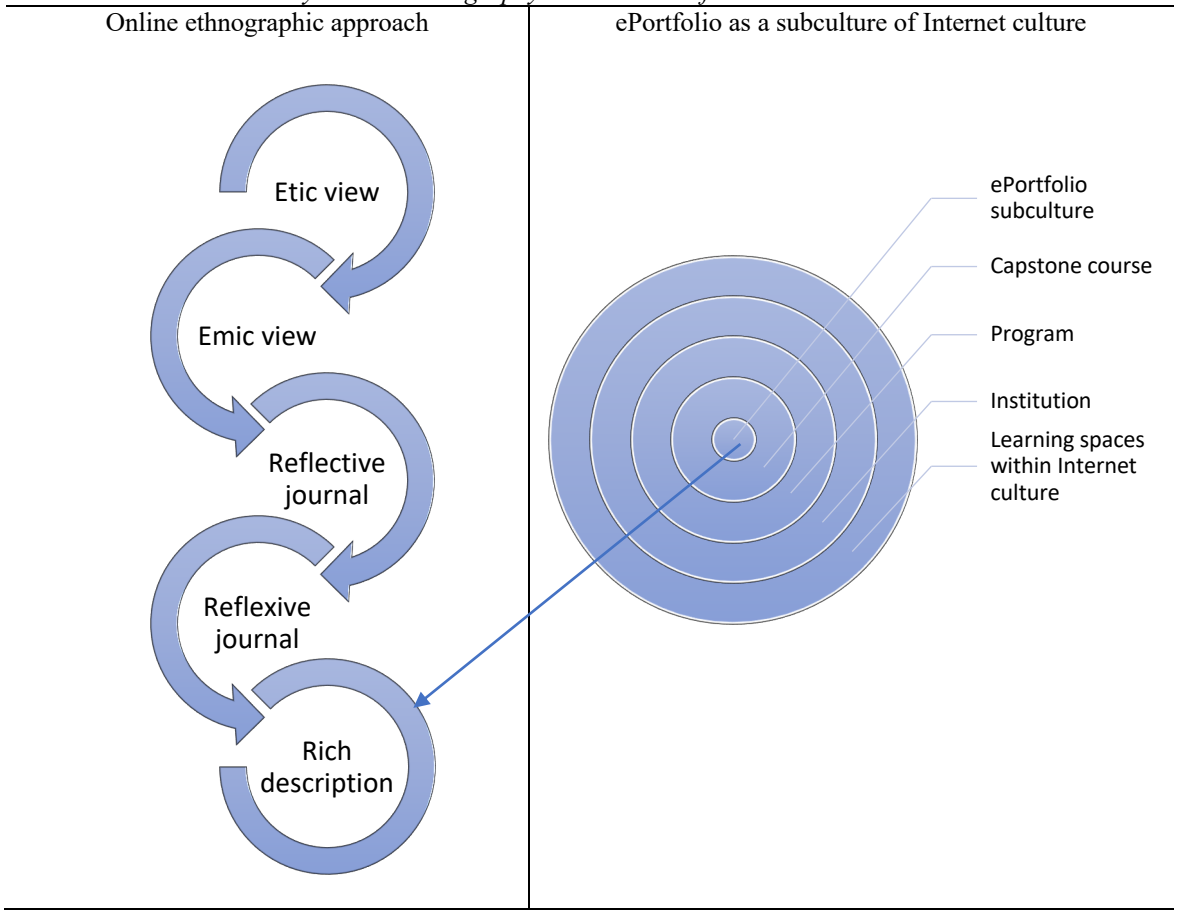
I also accessed online archives of students' ePortfolios. As a way of triangulating what the learners did with what they said they had done, during my analysis and interpretation of the findings, I viewed the artifacts of the ePortfolio pages. I selected ePortfolios based on my access to the site of the students and the corresponding recording of their presentations which were part of the course archives. Among the six respondents, only one had an accessible site. Although the artifacts on the ePortfolio pages are rich in content, they are beyond the scope of my data sources and were therefore excluded from the coding phase. These artifacts help tell the story of each learner in a meaningful way and could be used in a future study.

Maintaining my alignment with my philosophical positioning, theoretical underpinnings, and epistemologies of the research design also emerged as possible challenges. Engaging in daily writing and reflecting throughout the study kept me grounded.

Delimitations and Limitations

The focus of the study was on graduate students enrolled in three iterations of the same online university course using ePortfolios. This delimiting factor has

Figure 2
My Online Ethnography With the ePortfolio at the Center



impeded the generalizability of the results to all uses of ePortfolios in higher education due to the relatively small participant pool size. There were 65 students enrolled in the three courses from which data were collected. I chose to limit the research to those participants who had completed their ePortfolio projects, which reduced the number of possible study participants to 57 students. Among those students, there were six from two of the three courses who participated in the study. The six participants included three males and three females who worked as physiotherapist, paramedic, researcher, academic professional, and some who also taught at various professions. With only six respondents for the questionnaire and interview questions, the data were fortified by aggregating additional responses from answers to similar questions from 21 recorded student ePortfolio presentations.

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By choosing to apply an online ethnographic methodology with one small group of students, I sought a rich description of experiences knowing that a small number of study participants would prohibit the generalizability of the findings. I let observations guide my interpretation of what I was seeing, hearing, and experiencing in this learning space. I brought my outsider perspective (etic view) to the field site and enabled myself to see commonalities with the insider perspective of the learners (emic view) in this community (see Figure 2).

This interaction brought me close to the students and made me aware of the inclusion of possible biases, personal beliefs, and philosophical assumptions in the analysis of findings. I used my reflective notes and field notes to help me think through my own biases and assumptions during the data collection and analysis phases of this study. In addition, I also relied on other forms of notes derived from moments of both reflectivity and reflexivity, which became part of my own ePortfolio (albeit in a redacted format). By choosing to conduct an online ethnographic study, I was able to address common limitations of research identified by Marshall and Rossman (2016) as cost,

time, researcher's stamina, access to field site, and formal approval to conduct the research. The last two limitations were more challenging to address. Access to some of the archived ePortfolios was limited due to broken links, and subsequently reduced the number of audio-files included in this study to 21. Receiving formal approval for this research was a multi-step, multi-stakeholder process that included support of my doctoral committee through the successful completion of the candidacy exam, research ethics approval showing compliance with both national and institutional standards for conducting research involving humans, and permission from the instructors of the three courses in which the study was conducted.

Methodology

The research design enabled me to observe, explore, and examine cultural phenomena of the development of reflection in capstone ePortfolio projects from the perspective of the participants who were master's students. I used mixed methods to capture the perception of the students in open-ended questions and added a quantitative flavor in the collection and analysis of close-ended questionnaire data. The qualitative approach provided guidance, insight, and knowledge (Nelson et al., 1992) for the design of analysis of the rich data collected during my fieldwork through the course site. Just as there is no single picture of the world, there is no single blueprint for an ethnographic research (Cohen et al., 2011). There are many varieties of qualitative research; the source of such information includes oral and written data drawn from direct experience and meanings that may take a different shape depending on the qualitative research being undertaken (Preissle, 2006).

In choosing an ethnographic research methodology, I relied not only on personal experiences as a direct participant-observer but also on maintaining field notes to render rich data in the form of thick descriptions (Geertz, 1973). Personal experiences, as cautioned by Mouly (1978), are the simplest and most basic form of wisdom. As such, in order to help me think through biases and assumptions influencing my field notes, I created a reflective journal where I posted my thoughts and later reflected on them. This ongoing process of using field notes and a reflective journal to think about my thinking at various stages helped me reformulate the interview questions (Appendix C) to more adequately address the research questions and provide the participants a broader choice of themes to address in their responses.

Ethnographic Process

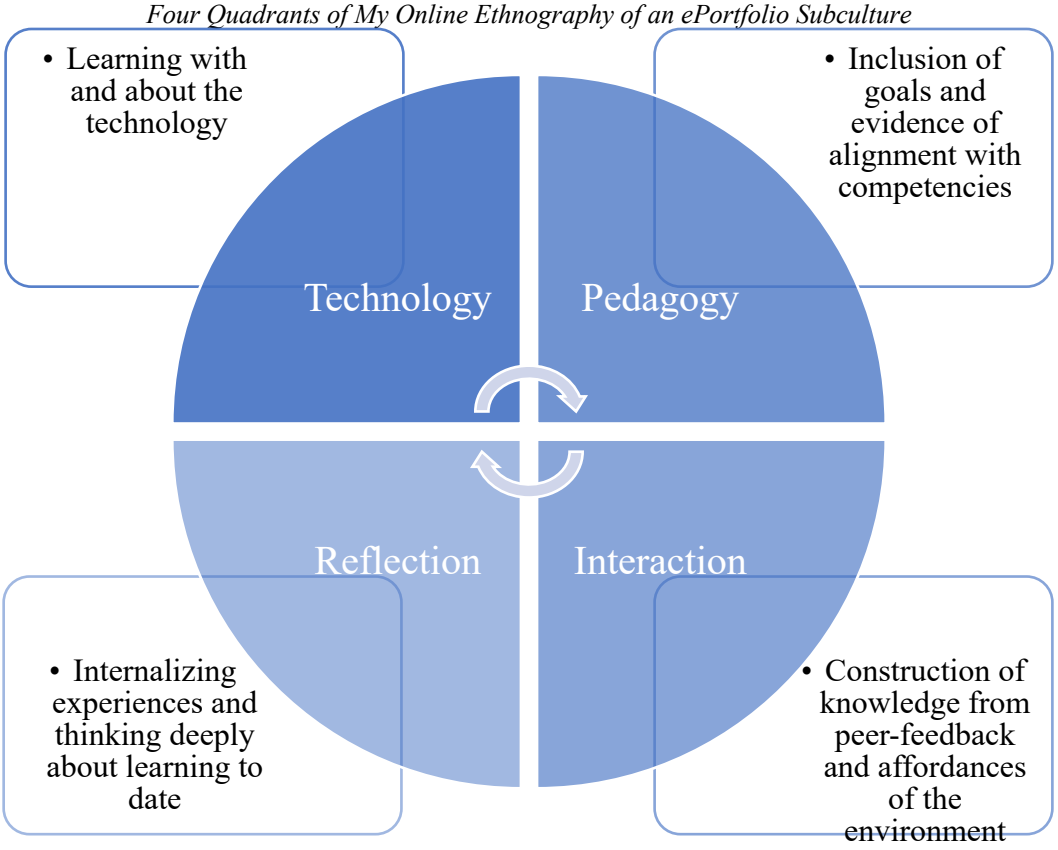
Initially, I saved all notes, symbols, and thoughts as part of my personal notes. Under careful consideration, these notes were later categorized as passages for my journals (during moments of reflectivity and reflexivity) and research notes with data from the field. To help me minimize inevitable biases, I triangulated my sources of data from questionnaires and interviews with the six study participants, observations in three iterations of the course, and recordings of the 21 archived student presentations of ePortfolios. I relied on the information from these 21 audio-files as a fallback approach to properly analyze the rate of appearance of certain themes, which I may not have otherwise identified due to the small number of participants in the one-on-one interaction phase of my data collection.

Institutional approval of my ethics application gave me access to the recordings in three courses, which would have been equivalent to approximately 60 hours of raw material; however, due to technical difficulties, some of the links to the recordings were no longer available. In the end, I had access to 28 hours of raw data from all three courses combined, which included 21 recordings of 1-hour student presentations. The remaining hours were from the live sessions, which, although rich in data, were not included in this project. These recordings included the very essence of what a process ePortfolio entails, which is the storytelling of the learning journey of each student, the alignment of program competencies, and their reflection on their chosen artifacts and on their learning.

Ethnography

Ethnography is a method that originates from the discipline of anthropology but is applicable to other disciplines. It differs from other research designs due to its in-depth study of an aspect of a culture, such as the ePortfolio subculture in the vast spaces of internet culture, which became my field site. Conquergood (1991) referred to ethnography both as a method (the fieldwork process) and as a product (the published monograph). He further posited that ethnographic rigor, disciplinary authority, and professional reputation are established by the length of time, depth of commitment, and risks taken by the researcher (emotional risks, rather than physical, in my online study) in order to acquire cultural understanding. Professional standards of ethnographic fieldwork were established by Malinowski (1922/1961, as cited in Roldán, 2003) who recommended participation in addition to observation to intensify cultural understanding. In response to a need to study communities in spaces of the internet, Hine (2016) introduced a new form or way of conceiving ethnography, virtual ethnography which was applicable for virtual, online, or digital spaces. A little more than a decade later, Kozinets (2010) referred to his online ethnography as netnography, a method, he posited, designed specifically for the study of cultures and communities online.

Figure 3
Four Quadrants of My Online Ethnography of an ePortfolio Subculture



Embodiment

In online communities, a researcher can personalize her ethnography by her embodiment of the fieldwork as aligned with Malinowski's revolutionized way of doing ethnography (Roldán, 2003). Such revolution resulted from Malinowski's praxis in the field (Roldán, 2003), and, as Kuper (1983) suggests, it espoused the premise that ethnographers were more than theoretical fieldworkers who visited the field and observed others. As a "privileged theoretician," the ethnographer "can understand from within how the system really works" as a result of an embodiment of seeing, reporting, and analyzing meaningful experiences (Kuper, 1983, p. 194).

By modifying his behavior in the field, Malinowski was able to experience this single-body experience (Roldán, 2003). Among the modifications he made regarding his behavior in the field included extending period of time in the field, focusing research on a few specific individuals, studying the participants in their present existence, speaking the local language, increasing the number of observations, and changing his style of reporting (Roldán, 2003).

My embodiment of myself as a researcher in the ePortfolio communities that I observed also necessitated a considerable amount of time to facilitate my embracing of experiences as they happened. After three years of ongoing observation (before beginning data collection), I spent a month entirely by myself in order to have the time and space to think, gather resources, return to previous learnings, make connections with new knowledge, and maintain awareness of everyday thoughts. It was during these moments of solitude that I fully understood my connection with ethnography. I visualized it both as a product (my writing of my experiences) and a process (the procedures I would follow). I began to sense that this innovative methodology seemed to have selected me as the storyteller of the activities of the learners in a community of ePortfolio creators. This embodied sensory experience, albeit a semester before I was officially declared a researcher in an ePortfolio community in a university in western Canada, capacitated my going beyond the here and now and further prepared me to properly observe the students as I conducted my research.

Observation is a mundane activity, one that is quintessentially human and highly personal. By participating inside the culture, I engaged in a gratifying way of knowing of others amidst others, and

thus began to embody the very essence of the culture—the emotional and intellectual aspects of a learning community with a common goal—the completion of a capstone ePortfolio project. My four years of observations of master's students completing their capstone projects were underpinned by four concepts (Figure 3) that guided this exploratory online ethnography and further facilitated the embodiment of my field work.

Guiding Concepts

During observations of the development of capstone ePortfolio projects, the internet learning spaces that housed the course I was observing enabled me to become immersed in the community in two ways:

- Emotionally (my ability to express feelings as I processed emerging experiences)
- Intellectually (my development of social competence as I engaged in reflective thoughts)

During the development of the ePortfolios, the vast online learning spaces facilitated the creation of a community by the students, a place where they interacted with one another, and shared common interests and activities as depicted in my research results.

Research Results

Responses to the primary research question, which focused on self-reflection, revealed that students perceived some value in the reflective moments when they shared educational experiences, articulated information about their journey, and paused to think back on their learning to date (see Table 1).

Responses by the study participants in the second layer, which included peer-to-peer reflection, revealed that despite the difficulty with feedback giving and receiving, peer interaction had helped with community building (see Table 2).

Responses that included data from the archived student presentations also revealed a perceived need by the students (earlier in their program of studies) to (a) know more about ePortfolio process and product, (b) learn to apply reflective writing, (c) understand how to meaningfully engage in constructive feedback, and (d) receive guidance on how to be confident and effective feedback givers and receivers throughout the development of their projects (see Table 3).

Summary of Study Outcomes

Many of the students in the capstone ePortfolio project course were initially unaware of the type of ePortfolio they were required to create. In consequence, they began to see the importance of the live course information sessions as a community event where their questions would be addressed.

During these sessions, the course instructors allowed

- voices of students to be heard,
- emotions to be expressed in a safe environment,
- doubts to be shared and clarified within the group, and
- modeling by participants who leveraged the affordances in their online environment.

Table 1
Participant Perception of Reflective Process in Capstone ePortfolios

Closed-ended answer (Questionnaire Q1)	*n*
Some value	5
No value	0
Not sure	1
Total	6

Table 2
Extent to which Feedback Contributes to Sense of Community Belonging

Closed-ended answer (Questionnaire Q3)	*n*
Some sense of belonging	4
No sense of belonging	1
Not sure	1
Total	6

Table 3
Seven Aspects of Recommendations for ePortfolios

Aspects	ePortfolio recommendations
Prerequisite	• Completion of courses that have reflective component. • Knowledge of experiential learning theories. • Viewing of course resources before the first live session.
Protocol	• Establishing support groups. • Encouraging study buddies. • Making participation in live sessions a course requirement.
Structure	• Guidelines on the type of product and process required. • Directions on the process of creating an ePortfolio earlier in the program. • Timelines for each phase of the project including feedback giving.
Feedback	• Learning to provide constructive feedback. • Highlighting benefits of commenting on artefacts of peers. • Acknowledging value of feedback received to enhance the experience.
Reflection	• Recognition that ePortfolio journey is enhanced through interaction. • Awareness of self and peers in spaces of internet. • Attentiveness to the value of a community of ePortfolio creators. • Use of meta-analytical approach in live sessions to brainstorm ideas. • Sharing of goals coming into the program to trigger reflective thoughts.
Modeling	• Discussions on a generic ePortfolio in initial sessions of the course. • Presentations by former course participants to share their legacy. • Updates on ePortfolios in live sessions to generate engagement.
Affordance	• Access to practice room throughout the duration of the course. • Use of a dedicated link for all live sessions. • Availability of recordings in course calendar after each session. • Update of course resources to make the course site more user-friendly.

Many of these synchronous sessions were laden with emotions related to learner vulnerabilities and personal circumstances. These unstructured and informative sessions enabled the learners in the course to self-identify their attributes, and to promote accountability within the community. This learner self-awareness—fostered by an ePortfolio subculture—and this identification of personal attributes—as aligned with the layers of affect—worked in tandem with the course environment and resources left by previous ePortfolio creators.

As a physical compilation of the work of students, ePortfolios allow for the sharing and storytelling of their journey, which includes happy and sad moments, successes and failures, discoveries and transformations, and, most importantly, a sense of growth on a personal, academic, and professional level. Acknowledging the cumulative process of learning events experienced by the learners, a topic that emerged from the responses of the study participants, was the need to have prerequisites for participants registering in a capstone ePortfolio project course. Students suggested that courses with reflective learning activities be a prerequisite to enrolling in this final capstone ePortfolio course. Their rationale was that an engagement with experiential learning would be of value to students undergoing the capstone process. The students who had prior experience with reflective theories and practices revealed perceiving differences in their assimilation of the process ePortfolio format from the other students in the course. A further suggestion from the students was to generalize throughout their master's program some of the information garnered from this course namely core competencies, critical reflection, feedback interaction, and ePortfolio development.

In observing, surveying, and interviewing students, I gained insights into the experiences of students developing their capstone ePortfolios and participating in self-reflection and peer-reflection in an online learning community. Regarding the participants in this study, my findings highlight the affordance of ePortfolios to make observable the attributes of the students as they demonstrate learning, validate the importance of feedback interactions to the students, and elucidate the role of the students and value of reflection in ePortfolio projects. Regarding broader concerns of this study, the findings (a) provide insight into the development of process ePortfolios created by master's level students, (b) highlight the importance of affect in deep learning and reflecting, (c) demonstrate an application of the ecological constructivism learning theory, and (d) stimulate discussion on ePortfolio pedagogy and innovative assessment.

Recommendations

During various phases of the ePortfolio journey, community members revealed feeling confused, lacking information, and being uncertain of how to proceed. They put forth several recommendations to facilitate the journey of future students. I have added my suggestion to theirs, which were developed as a result of the findings. Together, these areas have been categorized into seven aspects of recommendations for ePortfolio courses and are encapsulated in Table 3. Each area will be discussed further separately.

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Students suggested that it would be beneficial to take courses that included reflective learning activities prior to their enrollment in the final capstone ePortfolio course in the program. Their rationale was that prior engagement with reflective experiential learning would be of value to those undergoing the capstone process. Students perceived a difference in the assimilation of the process ePortfolio format between those students with prior experience of reflective practice and those without.

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The list of recommendations compiled by the students included ways to foster connection between peers. A student revealed:

> Within my core group the interactions were integral to my success, they motivated me to keep going even when I was unsure my process was on the right track. I developed supportive friendships, and we were there to support each other through to the end of our work. I am definitely glad to have been part of their journey, and grateful they were part of mine.

One recommendation was based on the students' valuing the attendance of weekly synchronous group meetings as a means "to help encourage the growth of a strong feeling of class unity." The recommendation was that attendance be required. Another recommendation encouraged the formation of "study buddies" as a potential layer of support. By creating study buddy subcommunities, group members would be accountable to one another, and thus ensure the provision of more in-depth feedback on all seven pages of each other's collection rather than on just the first two. These subcommunities would develop a shared culture. Culture is both inside the head and also out there in the world, and encapsulates the views of the group regarding what is positive or negative, true or not, and rational or irrational (Ormrod, 2009). The students in each ePortfolio subcommunity would create their own framework, and thus determine the normalcy and feasibility of what type of support the buddies are able to provide.

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Among the suggestions that students made was a need for "strong direction provided, on a timely basis, whenever there are signs of confusion and uncertainty in the process of building an appropriate and meaningful e-portfolio." Another student expressed having some difficulty in the initial days of the course and wrote:

> In the first few weeks of the course, I struggled to relate the pedagogical elements (the artefacts and the underlying structure of the MEd program) to the desired end product. I also had to understand the use of terminology to provide precise descriptions of the elements. I think this represented an initial "zone of proximal development" for me. Fortunately, I was well supported by the academic scaffolding provided by the instructor team!

Although the course site stated that the learning environment was accessible to the new community members a number of days before the first day of the course, few students opted to log in and visit the site in anticipation of their first day in the capstone ePortfolio project course. Furthermore, since attending the first session was not yet mandatory, students who were not in attendance chose to watch the recording of the session at a more convenient time for them, which may have led to more questions than answers on their part. These factors may be contributors to a student perception of lack of course direction.

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Students wrote that they would have "appreciated having more comments" on all seven pages of their collection. They received meaningful feedback from peers in the beginning of the course, but very little on the artefacts in the final pages. This factor is partly owed to the ongoing student presentations before the final weeks of the course, which resulted in fewer students providing feedback. Students further stated the importance of recognizing that the ePortfolio journey becomes "more meaningful through interaction with the group." They also suggested the need to "highlight the benefits of sharing feedback and mutual encouragement often, and with as wide a group of fellow students as possible." The rationale was that community members would then acknowledge the "value of feedback," and the ways it enhanced the ePortfolios when feedback was "careful, considered, and constructed" in a targeted, timely, and action-oriented manner.

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Students referred to reflection as a tool for reviewing information in all the courses along with "many of the concepts and interactions" experienced in each of their courses and related course work. The participants who valued their reflective experiences stated that the capstone projects had been personally, academically, and professionally relevant. They further stated that these experiences had been of a reflective nature, and that the ePortfolio development had helped with their process of reflection. The recommendation was to continue and expand the use of reflective practice in online higher education.

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Another recommendation was to structure the weekly sessions to include presentations from former ePortfolio graduates. Graduates of the program would present their own ePortfolios followed by scholarly discussions similar to the ones that follow the final student presentations. The benefits would be threefold: former students would share their experiences and highlight their accomplishments; current students would experience the protocol of a final master's presentation; and course instructors would be able to identify the students who may be needing additional support based on the questions asked following the presentations. One of the students shared the following:

> The peer review and instructor feedback and encouragement really helped focus my writing and helped me to flesh out my thoughts. Participation in the [synchronous Adobe Connect] sessions also helped quite a bit. The session by a former student specifically was moving and allowed me to see [the example of the student as] a guide to reflection.

In this social learning environment, members of the community would serve as models in terms of behaviors, values, and attitudes. This bridging of cognition and affect would undergird the subsequent student awareness of the benefits of creating a reflective ePortfolio project.

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The final grouping of recommendations is related to the affordances of the educational technologies used in a capstone ePortfolio project course. Students reported feeling uninformed when they were faced with an intense 3-month, 7-page reflective ePortfolio project as a graduation requirement. The overall sentiment was one of needing more guidance in the initial courses of the program in order to facilitate the selection of artifacts and the alignment of the competencies in their final course. The recommendations include providing extended and continued access to the practice room throughout the duration of the course, having a dedicated link for the synchronous online sessions, and making recordings of the synchronous sessions available within the online course calendar as well as updating the course resources to make the course more user-friendly.

The process ePortfolio as a holistic experience helped learners become comfortable with articulating the attainment of competencies as a meta-analytical approach to what they learned. Learners underwent a series of emotions, feelings, and reflective experiences during the development of their projects, which included peer-review of artifacts and self-assessment of one's own attitudes toward them. The seven aspects of recommendations provide a comprehensive overview for course improvement based on the strengths of ePortfolio use in higher education.

Discussion and Findings

My primary research questions pertained to self-reflection, which is the essence of the first layer of my study. My interest was in learning the value, if any, students perceived of the reflective process in the development of their ePortfolios. The questions of the second layer dealt with peer-to-peer reflection resulting from peer feedback giving and receiving interactions. I wanted to learn more about the extent feedback interaction provided the participants a sense of belonging to a subculture in an online learning community as an instance of internet culture.

Description of a culture is the result of ethnography, and such description can only emerge from a lengthy period of intimate study in a given social setting (Van Maanen et al., 1982, p. 694). For four years, I immersed myself in the capstone ePortfolio project course site as a direct participant-observer in various roles—intern, volunteer tutor, and researcher.

My emic role as an insider enabled me to gain better understanding of the intangibles (e.g., beliefs, ideas, values, perceptions of the students) in what was to become part of the data in this online ethnographic study. I was well positioned to observe what the participants did rather than having to rely solely on their recounts of what they did.

Since I had experienced an ePortfolio as a terminal project as a graduate student, I was ready to conduct my study and pursue ethnographic findings that facilitated my descriptions of local behaviors and truths within that context. Earlier in my observations, I began embodying (turning abstract ideas into rich descriptions) the interactive processes of the learners in the community, their culture, their ways of seeing, and even some of their

innermost feelings and emotions (e.g., elation and frustration, understanding and confusion).

The rich data collected on the perceived experiences of learners in three iterations of the capstone ePortfolio course have

- provided me with better insights into the development of reflection from the point-of-view of the students;
- elucidated the importance of feedback interactions, and value of self-reflection and peer learning during the creation of ePortfolios;
- contributed knowledge on the role and impact of capstone ePortfolio projects on learning and teaching;
- brought forth discussion on the role of ePortfolio use in assessment innovation; and
- stimulated conversations on contemporary theories of learning.

These findings confirm results of research previously done that led to the recognition of ePortfolios as an impactful instructional practice and its subsequent addition to the list of high-impact practices (Kuh, 2008; Watson et al., 2016). My findings also showcase the ePortfolio as a sophisticated field of research, where rich data and meaningful experiences are abundant, observable, and educational.

As posited by Fullan (2013), technology is what transports the students from one learning stage to the next; however, "pedagogy is the driver with student learning at the center" (p. 51). Technology and pedagogy are among the four constructs on which I relied throughout my immersion in the field site (i.e., online course) and participation in a community of learners (i.e., subculture of ePortfolio creators).

Four Constructs

My study considered the connections of ePortfolios as pedagogy, the process of reflection, and the feedback interactions that fostered learning and further reflection on the artifacts displayed on the collection of pages. The ePortfolio technology became the vehicle for culture sharing among students and positioned the capstone project as a significant part of a subculture in a manifestation of internet culture. As I continued observations of students developing their projects, I noticed how pedagogy, technology, interaction, and reflection worked in tandem in the various iterations of the capstone ePortfolio project course in which I participated (see Figure 3).

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ePortfolio pedagogy not only enriches student learning but also helps connect practitioners with what they do daily—teach students and facilitate their learning (Eynon & Gambino, 2017). This innovative pedagogy came as a surprise to initial users and implementers, as there was little literature or prior work done in the field at the time (Danielson & Abrutyn, 1997). As such, early proponents had a "feeling hampered by no prescription or even direction" (Cambridge et al., 2009, p. 2) of what might emerge when they attempted to implement ePortfolios in their practice. In consequence, those who continue to seek knowledge about ePortfolio pedagogy see the need for more research in the implementation of this educational innovation. Educators in various fields of practice (e.g., engineering, nursing, business) continue to seek ways to learn more about how to apply ePortfolio projects not only to help students learn better, but also support reflection (Jayatilleke & Mackie, 2011; Sepp et al., 2015; Slepcevic-Zach & Stock, 2018). The literature presents ePortfolios as an educational innovation that fosters new uses (e.g., as a capstone project of culminating experiences) and leads to new research findings (e.g., ePortfolio as a high-impact practice; Watson, Kuh, Rhodes, Light, & Chen, 2016; Kuh, 2008). When I began this study with master's students, my view of ePortfolios placed them as a technology-enabled pedagogy, and as a key part of a digital ecosystem in a specific instance of internet culture. My initial perception evolved as the study progressed. As such, I continued an ongoing quest for knowledge about this education innovation (Eynon et al., 2014). Consequently, I began to understand the importance of professional self-development mediated by ePortfolios (Zuba Prokopetz, 2018a) to help educators and learners attain the higher-order level of competencies required for the digital society. With the rapid development of information and communication technologies (ICT), the learning and teaching of these competencies are now essential (Benito-Osorio et al., 2013). The prevalence of social and emotional competences is now posing a challenge for institutions worldwide causing ill-prepared educators to be unable to properly prepare their students. Benito-Osorio et al. (2013) posited that some of the challenges universities currently have in preparing academic staff for the future results from the evolution of the Web.

For example, during Web 1.0, the read-only, one-way interaction web, the soapbox lecturing style was prevalent in higher education. In the second generation, Web 2.0, the read-write online social network web, teaching—rather than lecturing—became student-centric and collaborative. The third generation, or Web 3.0, began to allow data to be used across application and community boundaries, which enabled machines to not only understand but also respond to human requests. With the mobile web, or Web 4.0, consumers were able to connect their devices in real time. The

fifth-generation web, Web 5.0, however, is more sophisticated; it is open, linked, and intelligent. As the emotional web, it will require a higher level of competence, since it connects users with one another via data placed on the web by the users themselves. The linked data are based on documents, places, people, products, and events; the more connections provided by the data, the more powerful the data will be (Berners-Lee, 2009). This new generation is evolving the web into a world data space (Berners-Lee, 2009), thus positioning ePortfolios as a sophisticated research site in internet spaces.

I see a parallel between the evolution of the web throughout the previous 20 years (from web of content to web of thoughts) with the types of pedagogy applied in higher education (from teacher-controlled lecturing to guided student-managed production of learning). The fifth-generation web in this era of sensory and emotional knowledge, as evidenced in capstone ePortfolio projects, necessitates that educators "develop emotional competences and transmit them to their students in order to produce graduates who will be more adaptable to new socio-professional contexts" (Benito-Osorio et al., 2013, p. 274). In consequence, in order to help educators develop the interpersonal and intrapersonal competences required for the emotional web, policy makers in colleges and universities must engage in serious discourse about how to better prepare their academic staff for what is inevitable—the use of sound pedagogy in learning and teaching with ICT.

The future of ePortfolios—as I envision—encompasses changes in terms of theoretical constructs and educational practice, which include some form of differentiated teaching (rather than lecturing) and adoption of capstone ePortfolio projects to provide the proper venue for educators to:

- re-learn their craft,
- express their creative side,
- engage in self-reflection,
- develop social-emotional competence for online spaces, and
- achieve mastery learning and teaching with innovative tools.

As a result, the students in the courses of these instructors will be able to demonstrate their learning to date in more productive and artistic ways.

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There are currently many technologies that make it possible for students to showcase their achievements and for their instructors to conduct assessments. ePortfolios, which I consider a form of "non-traditional learning" (Wedemeyer, 1981, p. 219), have emerged as a technological tool that

- enables teachers to assess their students (assessment ePortfolio),
- helps students to showcase their achievements (showcase ePortfolio), and
- makes affordances for the development of reflection (process ePortfolio).

Although initially seen as a technology, ePortfolio implementers such as Light et al. (2012) recognized that "pedagogy *must* lead the technology" (p. 148), as our students are undoubtedly the most important stakeholders in an ePortfolio development process. In addition, learning the technology on its own does not enrich student learning (Eynon & Gambino, 2017). Therefore, it is important for ePortfolio implementers and educators to be cognizant of the ways technology may at times help and at others hinder the ePortfolio development process of their students.

During my initial participation as a user (as a learner), and also as an implementer (as an educator) of ePortfolios, I noticed that there were challenges that both my students and I had to overcome related to learning how to use the technology and reflecting on the events afforded by ePortfolio technology. I also noticed that, as my students (adult language learners) learned to use the ePortfolio tool (a challenge in and of itself), they engaged in awareness and an ongoing process of thinking about what they were experiencing. In addition, there were some aspects of peer interaction among the students that facilitated the development of reflection and the subsequent articulation of not only what was happening but also how and why it was happening in such a way. These peer interaction efforts facilitated by this instructional technology gave birth to and even strengthened learning communities, as I observed both in my blended ESL class and also in the online master's level course in the study.

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Feedback interaction and assessment of self and others is one way of exposing educators and students to reflection. This assessment of self, or one's thoughts about one's actions, can also be referred to as reflection and metacognition (Blackburn & Hakel, 2006). The ePortfolio development facilitates metacognition because it enables the creators to engage in self-assessment and self-reflection (Commander & Valeri-Gold, 2001; Hamm & Adams,1992). This type of self-reflective learning is also evident during the feedback interactions among peers in an ePortfolio community of learners.

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Appendix A
Open-Ended Questionnaire

Capstone Electronic Portfolio of Master's Students: An Online Ethnography

Principal Investigator (Researcher): Rita Zuba Prokopetz Email: rprokopetz1@athabasca.edu

Date: _____ Code: _____

This study proposes two layers of investigation into the experiences of students in an online master's program in a fully online university in western Canada. Your participation in this first part of my project includes your response to this open-ended questionnaire (via email). The expected length of time is approximately 15 minutes of your time. You have between January 15 and January 22, 2019 to complete this part.

1. When you were participating in your capstone eportfolio project course, what value, if any, did you perceive regarding the reflective process? (choose one)

Some value	No value	Not sure
◯	◯	◯

2. What were your overall perceptions of the development of reflection during your experiences with your capstone eportfolio project? (please explain)

3. To what extent does giving and receiving feedback provide students with a sense of being a part of a subculture of an online community of learners? (choose one)

Some sense of belonging	No sense of belonging	Not sure
◯	◯	◯

4. How did you perceive your experiences as peer-feedback giver in the development of reflection as you participated in a capstone eportfolio project? (please explain)

5. How did you perceive your experiences as peer-feedback receiver in the development of reflection as you participated in a capstone eportfolio project? (please explain)

Thank you for participating in my research project. If you have any questions at any time during your participation, or if you require more information, please contact me by email at rprokopetz1@athabasca.edu or my supervisor by email debrah@athabascau.ca or by toll-free phone: +1 866-441-5517.

Appendix B
Semi-Structured Interview Prompts

Capstone Electronic Portfolio of Master's Students: An Online Ethnography

Principal Investigator (Researcher): Rita Zuba Prokopetz
Email: rprokopetz1@athabasca.edu

Date: _____ Code: _____

This study proposes two layers of investigation into the experiences of students in an online Master's program in a fully online university in western Canada. Your participation in this second part of my project includes an in-depth semi-structured interview (via Skype) with your subsequent approval of the transcript. The expected length of time is between 30-45 minutes, plus an additional 15 minutes to allow me to share the transcript of my notes with you. You may choose the questions you prefer to answer in each of the themes. You have between January 25 and January 31, 2019 to complete this part.

What is your overall feeling toward the capstone eportfolio project?

What areas of your process eportfolio journey were the most challenging for you?

What areas of your process eportfolio journey were the most rewarding for you?

What aspects of your capstone eportfolio project development do you feel have helped your ability for critical reflection as you were completing your collection of pages?

What aspects of your capstone eportfolio project development do you feel have hindered your ability for critical reflection as you were completing your collection of pages?

What is your opinion about the peer-feedback interactions, as a feedback giver, during the development of the capstone eportfolio projects?

What is your opinion about the peer-feedback interactions, as a feedback receiver, during the development of the capstone eportfolio projects?

What aspects of the process eportfolio as they relate to the technology did you find were the most challenging for you?

What aspects of the process eportfolio as they relate to the pedagogy did you find were the most challenging for you?

What aspects of the process eportfolio as they relate to the development of reflection did you find were the most challenging for you?

What aspects of the process eportfolio as they relate to the technology did you find were the most rewarding for you?

What aspects of the process eportfolio as they relate to the pedagogy did you find were the most rewarding for you?

What aspects of the process eportfolio as they relate to the development of reflection did you find were the most rewarding for you?

What aspects of the eportfolio journey helped trigger your ability to engage in critical reflection as you were completing your collection of pages?

To what extent have the peer-feedback interactions in this course provided you with a sense that you belonged to an online community of learners?

At what point during your capstone eportfolio development did you feel that you were able to fully immerse yourself in the critical reflection required for the completion of your eportfolio project?

NOTE: You may also opt to be present during my viewing of the recording of your capstone eportfolio project presentation between February 01 and February 10, 2019.

Thank you for participating in my research project. If you have any questions at any time during your participation, or if you require more information, please contact me by email at rprokopetz1@athabasca.edu or my supervisor by email debrah@athabascau.ca or by toll-free phone: +1 866-441-5517.

Appendix C
Revised Semi-Structured Interview Prompts

Capstone Electronic Portfolio of Master's Students: An Online Ethnography

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Date: _____ Code: _____

This study proposes two layers of investigation into the experiences of students in an online Master's program in a fully online university in western Canada. Your participation in this second part of my project includes an in-depth semi-structured interview (via Skype) with your subsequent approval of the transcript. The expected length of time is between 30-45 minutes, plus an additional 15 minutes to allow me to share the transcript of my notes with you. You may choose the questions you prefer to answer. You have between March 01 and March 08, 2019 to complete this part.

CAPSTONE EPORTFOLIO PROJECTS

What is your overall feeling toward the capstone eportfolio project?

What areas of your process eportfolio journey were the most challenging for you?

What areas of your process eportfolio journey were the most rewarding for you?

CAPSTONE EPORTFOLIO PROJECTS / CRITICAL REFLECTION

What aspects of your capstone eportfolio project development do you feel have helped your ability for critical reflection as you were completing your collection of pages?

What aspects of your capstone eportfolio project development do you feel have hindered your ability for critical reflection as you were completing your collection of pages?

What aspects of the process eportfolio as they relate to the development of reflection did you find were the most challenging for you?

What aspects of the process eportfolio as they relate to the development of reflection did you find were the most rewarding for you?

What aspects of the eportfolio journey helped trigger your ability to engage in critical reflection as you were completing your collection of pages?

At what point during your capstone eportfolio development did you feel that you were able to fully immerse yourself in the critical reflection required for the completion of your eportfolio project?

CAPSTONE EPORTFOLIO PROJECTS / CRITICAL SELF-REFLECTION

At what stage of your capstone eportfolio project development did you begin to experience the need to go deeper inwardly as you attempted to connect some of the program competencies to your learning experiences to date?

What is your perception of the affordances provided by the capstone eportfolio development as they relate to facilitating a process of awareness: awareness of self; awareness of learning (ah, ha! and oh, no! moments); awareness of community; and awareness of your own gifts?

What aspects, if any, of the eportfolio as a product (the platform, the technology) and as a process (the capstone eportfolio project development) hindered your ability to travel inwardly as you attempted to align learning goals (from both beginning and end of your program) and competencies with your learning to date?

What aspects, if any, of the eportfolio as a product (the platform, the technology) and as a process (the capstone eportfolio project development) facilitated your ability to travel inwardly as you attempted to align learning goals (from both beginning and end of your program) and competencies with your learning to date?

CAPSTONE EPORTFOLIO PROJECTS / TECHNOLOGY

What aspects of the process eportfolio as they relate to the technology did you find were the most challenging for you?

What aspects of the process eportfolio as they relate to the technology did you find were the most rewarding for you?

CAPSTONE EPORTFOLIO PROJECTS / PEDAGOGY

What aspects of the process eportfolio as they relate to the pedagogy did you find were the most challenging for you?

What aspects of the process eportfolio as they relate to the pedagogy did you find were the most rewarding for you?

What aspects of learning (about self, about the process eportfolio, about the community of learners) were the most helpful for you as you attempted to complete your project?

What aspects of cognition (what I am learning), affect (how I feel about what I am learning), and conation (why I am learning this) have been helpful during your eportfolio development journey?

CAPSTONE EPORTFOLIO PROJECTS / MODELING

What is your overall feeling toward the modeling provided by instructors and peers (former and current) during the development phase of the capstone eportfolio project?

What is your overall feeling toward the modeling you have personally provided to your peers (in this or previous eportfolio course iterations) as they relate to facilitating the completion of the capstone eportfolio projects?

What is your perception of the modeling that peers (from this course or previous course iterations) have provided as they relate to facilitating the completion of the capstone eportfolio projects?

CAPSTONE EPORTFOLIO PROJECTS / FEEDBACK

What is your opinion about the peer-feedback interactions, as a feedback giver, during the development of the capstone eportfolio projects?

What is your opinion about the peer-feedback interactions, as a feedback receiver, during the development of the capstone eportfolio projects?

What were your overall feelings before, during, and after some of your feedback-giving experiences?

What is your perception of your own feedback-giving experiences as related to the beginning of your project?

What is your perception of your own feedback-giving experiences as related to the time when you were completing your project?

What is your opinion about your experiences with feedback-receiving from your first acknowledgement of the comment by a peer up to a possible inclusion of the suggestions in your artefacts?

What is your perception of your experiences with feedback-receiving during your discerning and evaluating of what suggestions to include in your artefacts after your first acknowledgement of a comment by a peer?

PEER-FEEDBACK INTERACTIONS / COMMUNITY OF LEARNERS

To what extent have the peer-feedback interactions in this course provided you with a sense that you belonged to an online community of learners?

What aspects of interaction, if any, via feedback giving and receiving contribute toward strengthening a community of learners?

What is your experience with interaction, via feedback giving and receiving, and your bonding with members of an online community of learners?

NOTE 1: You may also opt to be present during my viewing of the recording of your capstone eportfolio project presentation between February 01 and March 08, 2019.

NOTE 2: You may withdraw from the study at any time during the data collection between February 01 and March 08, 2019 by contacting me via email rprokopetz1@athabasca.edu, and I will remove from my records all data along with the codes associated with your responses.

Thank you for participating in my research project. If you have any questions at any time during your participation, or if you require more information, please contact me by email at rprokopetz1@athabasca.edu or my supervisor by email debrah@athabascau.ca or by toll-free phone: +1 866-441-5517.

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http://www.theijep.com
2021, Volume 11, Number 1, 53-65
ISSN 2157-622X

Developing Student Agency: ePortfolio Reflections of Future Career Among Aspiring Musicians

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Bond University

Career preparation has gained increasing prominence in higher music education as governments and students alike demand a stronger focus on workplace readiness. While the existing graduate metrics work well for professions which feature traditional, full-time jobs, the potential for such a linear career path is limited for graduate musicians by fierce competition for work and a labor market in which precarious work is the norm. Music graduates tend to experience a career-long portfolio of part-time, casual, and contract-based work within and outside the music industry. This article reports on an innovative internship program that engaged student musicians in an in-curricular intervention related to their career thinking. The program and its assessments purposefully placed students into authentic learning contexts where their musical skills and their understanding of being a professional were challenged and expanded. Using the examples of scaffolded assessment tasks including an ePortfolio and a presentation of on-the-job learning, the article highlights students' reflections on how the internship engaged their career thinking and how the ePortfolio process helped them to curate that thinking. Students reported that the combination of an ePortfolio and scaffolded career thinking assessments enabled them to realize the relevance of their learning tasks and to create clearer career connections. Implications for the use of ePortfolios within WIL (work integrated learning) are discussed.

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An Example of Johari's Windows, From Luft (1970)

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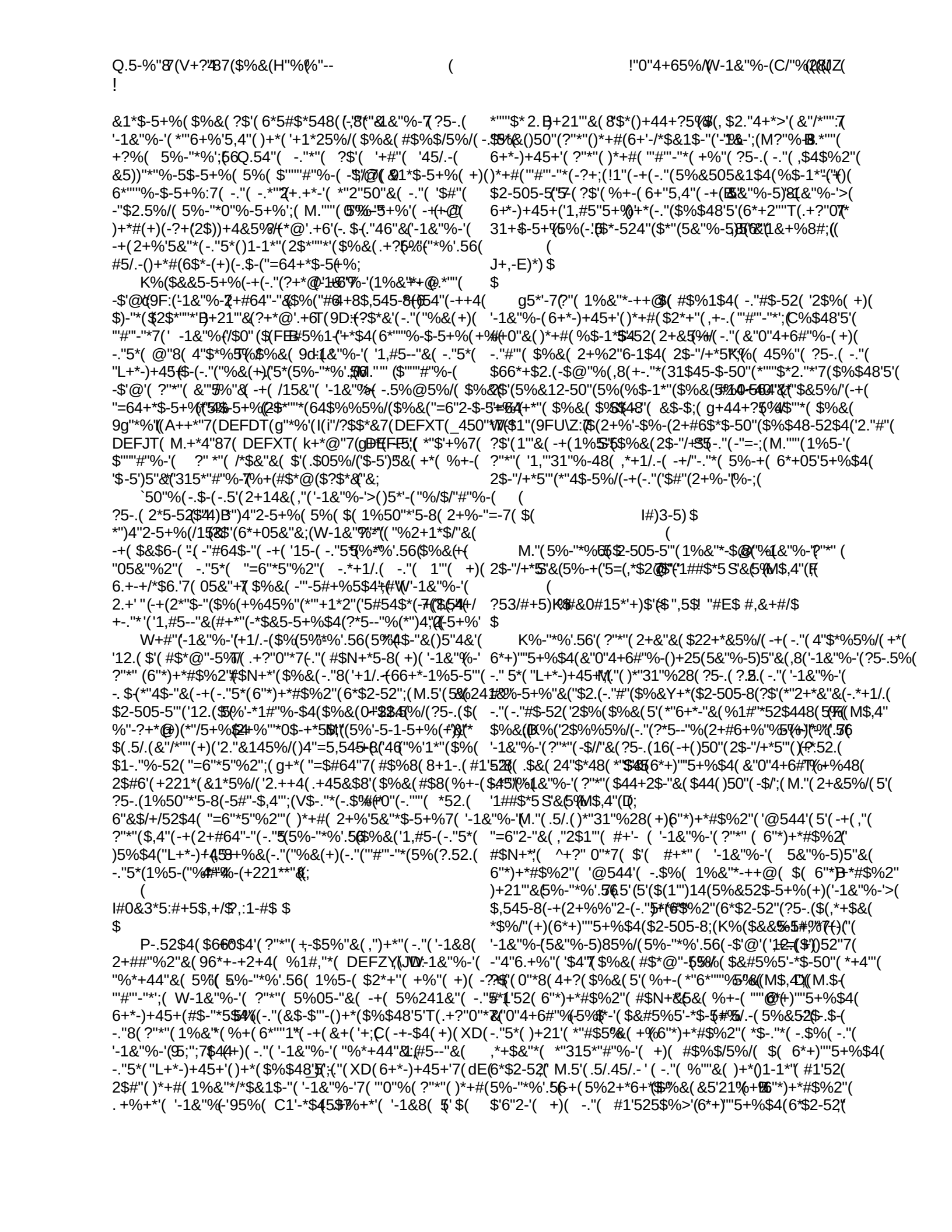

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The international ePortfolio community recognizes digital ethical challenges in ePortfolio practice, particularly if and how community members and students develop the digital knowledge and skills needed to create ethically strong ePortfolios and hone digital practices as technology users. The COVID-19 pandemic accelerated technology use without the time and energy needed to debate or define ethical necessities related to digital technology. In education, especially, the rapid transition to remote teaching and learning highlighted the need for understanding and enacting digital ethics principles in ePortfolio use for all stakeholders, including institutional decision makers and management, ePortfolio creators, and platform providers (Slade et al., 2020). As Coley (2012) reminded us, this pivot toward digital ethics requires educators and students to have ethical digital literacy, which raises the question of "how we might go about teaching awareness to these ethical dimensions in a digitally mediated classroom" (p. 106). Clearly, ePortfolios are a part of that digitally mediated classroom space.

Digital ethics discussions at inter/national conferences, such as the 2018 Association of Authentic, Experiential, and Evidence-Based Learning (AAEEBL) conference, the 2019 AAEEBL conference, and the 2018 Annual Conference of the Higher Education Academy UK (now AdvanceHE) raised similar concerns. A multi-institutional Australian research project investigating student use of ePortfolios with vulnerable groups, such as patients, clients, and children, recommended more proactive support for students' ethical decision making, especially when moving artifacts from a closed assessment model to an open online platform (Kirby et al., 2019). Higher education networking opportunities with educators also suggest that many students lack an understanding of the nuances of digital ethics in ePortfolio practice, despite the fact that institutions may have guidelines in place (Slade et al., 2018). Pre-pandemic research conducted by Gierdowski et al. (2020) identified digital ethical issues such as access, privacy, data collection, and technology to be important factors in students' educational experiences, although these issues were not consistently considered by educational stakeholders. A scoping review of current digital ethics and ePortfolio literature by Brown Wilson et al. (2018) found a scant number of scholarly articles on this topic.

More recently, a 2019 keynote at the Association of American Colleges and Universities (AAC&U) Forum on ePortfolio and Digital Learning by Sol Bermann, Chief Privacy Officer and Interim Chief Information Security Officer at the University of Michigan, cautioned ePortfolio practitioners to consider how ethical practices related to ePortfolios, student privacy, and data differ from laws. A new contribution by Gray and McGuire (2020) expanded this support imperative by developing a student-centered framework "that encourages students to ask discerning questions about how their content will be viewed or used" (p. 10). While literature is emerging about this important topic, it is obvious that more work is needed.

In this environment, AAEEBL released a global call for interested ePortfolio scholars and practitioners to establish the AAEEBL Digital Ethics and ePortfolio Task Force to develop principles and resources for the sector. The aims of this paper are to detail the rationale for, and the processes involved in, developing this task force and, then, to briefly outline the major output of the task force, the newly released *Digital Ethics Principles in ePortfolios: Version 1* (Cicchino et al., 2020) resource. In the final section, we discuss the key takeaways from this project and their implications for the field and propose future investigative opportunities for the task force.

Development Process

Describing the "ePortfolio Decade" in her retrospective for the AAC&U's ePortfolio Forum, Clark

(2019) identified the ePortfolio community as a driving force for "amplify[ing] the knowledge, skills, habits of mind, and attitudes of ePortfolio practitioners" and acknowledged that it is a "generous space . . . for returning and recursively revising our practice" (p. 62). AAEEBL's task force represents such amplification and reflection. A result of numerous international conversations over several years, the decision to create the task force, as well as the development of its operating procedures, exemplify the "generous space" that Clark recognized as critical to the ePortfolio movement.

Responding to increasing calls for digital ethics in ePortfolios to be recognized and addressed as central to ePortfolio pedagogy and practice, AAEEBL developed a multi-year focus in this area. The organization's efforts included conference presentations and conversations, international workshops, forums, and Twitter chats. In 2018, the AAEEBL Annual Meeting fostered multiple conversations on the challenges of digital ethics when implementing ePortfolios. The majority of these conversations focused on the ethics of what students chose to include in their ePortfolios and how those decisions were informed or impacted by issues like privacy concerns and copyright, with little to no attention to ethical considerations and choices made by administrators, educators, and platform providers. The 2019 AAEEBL Annual Meeting expanded on this discussion by incorporating broader digital ethics topics such as data privacy, accessibility, and digital identity. During this meeting, a Digital Ethics Forum promoted collaborative discussion regarding the wide range of challenges, questions, and available resources on this topic. This forum highlighted the need for a more formal resource for practitioners and stakeholders to reference when engaging with ePortfolios.

AAEEBL propelled these conversations forward with two initiatives. First, they partnered with ePortfolios Australia and ePortfolio Ireland to commence a community of inquiry focused on ethics and ePortfolios that included global Twitter chats and interactive panels with international participants. Second, they partnered with Auburn University to create the task force. A call for participants was released in September 2019, and 11 members were selected. A diverse group of scholars and practitioners, task force members included administrators, faculty, and industry professionals from three countries (the US, Australia, and New Zealand). Over the next nine months, members worked to conceptualize, draft, and publish a document to guide a variety of practitioners through digital ethics considerations in ePortfolio development. Due to size, interests, and time zones, they frequently utilized subgroups to maximize members' expertise with the goal of producing a resource that would guide an international readership in navigating digital ethics within the context of ePortfolios.

As an interdisciplinary, international group, the task force began their process by looking to model principle statements from the Center for Media and Social Impact (2013), the Conference on College Composition and Communication (2013, 2015), and the Global Society of Online Literacy Educators (2019). These offered general principles but lacked guidance on how to apply the principles in local contexts. Reflecting on their roles as administrators, educators, professionals, and platform providers, members asked how they might create a set of principles that, in addition to general guidance, offered clear resources and examples for how to apply each principle in various local contexts.

In October 2019, the task force explored the impact of digital ethics issues and practices on their own ePortfolio experiences, as well as ways in which the field could benefit from additional support in this area. This meeting resulted in approximately 12 key topics for further research. Given the scope of the work and the number of participants, the task force decided to focus on developing the first nine areas during the initial year. Each participant self-identified which topic they wanted to work with, and small group research began.

After each subgroup drafted their principle, members from other subgroups provided peer review. This process included question-raising, suggestions for further study, and additional resources and scholarship. This meeting allowed all task force participants to add their geographic and disciplinary expertise to each principle. Additionally, the members found significant overlap between the principles, so revisions were made to combine or clarify topics. From these models, three sections were designed to accompany each of the 10 principles: strategies, scenarios, and resources. These additional sections offer specificity, examples of application, and additional resources for readers who want to explore each principle's topic more extensively. For the purposes of length, the print version of the principles included in the Appendix has abbreviated the scenarios and displaced the resources; however, an expanded version of the principles can be read online (Cicchino et al., 2020). Although the work of removing redundancy from the principles is ongoing and only partially feasible given the interrelatedness of these ethical areas, it is important for readers to note that the accompanying strategies, scenarios, and resources may apply to more than one principle, particularly as they affect different stakeholders in various and unique situations. The task force's goal was to connect each strategy, scenario, and resource to its most relevant principle, but relevancy will necessarily differ across audiences.

In January 2020, the document was refined, and a draft was submitted to the AAEEBL Board for feedback on usability, content, and purpose. The AAEEBL Board completed a survey-style form that allowed the task force to efficiently synthesize multiple

reviewers' feedback and apply their suggestions to the next round of revision. Throughout the spring of 2020, the task force continued to revise the document, shifting focus to usability, word choice, citations, and consistency across the document. A subgroup explored options for a digital platform, a process that prioritized usability and accessibility. Once the platform, Scalar, was selected, this subgroup built the document, and the task force finalized technical edits. Because the full digital ethics principles document is lengthy, an abridged version is presented here with only one scenario for each principle. A rationale has been added to explain how each scenario can support users as they apply the principles.

Principle Structure and Content

As the task force worked through the iterative process of writing, reviewing, revising, and obtaining feedback from increasingly larger audiences, the multiple goals and audiences sparked conversations about how to best conceptualize a clear design and structure that would be equally accessible and valuable to all of the imagined readers. While the primary goal was to guide users in ePortfolio practice as it relates to digital ethics, the various local contexts in which users might find themselves needing and using such a guide had to be considered. In recognizing that students, professionals, educators, administrators, staff, and platform providers would need to make different uses of these principles, each principle had to apply to multiple stakeholder groups. Consequently, for each principle, the task force developed strategies and scenarios that are relevant to different kinds of users and a variety of local contexts.

In settling on a structure, the principles document began to organize around the set of 10 intentionally broad and overarching principles, loosely grouping the principles under three primary audiences: institutions for Principles 1 and 2, ePortfolio creators for Principles 3 through 8, and platform providers for Principles 9 and 10. However, as users explore the resource, the cross-applicability of the principles should be immediately evident. Therefore, each principle is followed by short, bullet-pointed strategy statements that highlight how the principle could/should be implemented in practice.

In order to offer a more complete illustration of each principle's application in practice, a set of scenarios situate each principle in specific local contexts. Each scenario explores a situation that is expressly applicable to one of the following audiences: students, educators, staff, administrators, or platform developers. Moreover, they are written in the second person to address the intended audience directly and are explicitly tagged in the hypertext version according to its primary intended audience. Tagging helps readers manage the scenarios by providing multiple entry points to discover them. It also allows readers to start the document by reviewing the scenarios designed explicitly for their primary role and work backward to concrete strategies and overarching principles.

The final element of each principle section is a resources page that includes articles, book chapters, digital repositories, guides, and educational websites relevant to that particular principle. Again, though not comprehensive, these pages are intended to provide users with directions for further study and support, as needed. An aggregate list of those resources is available at the end of the hypertext of the principles document, directly following our Glossary of Key Terms, which clarifies basic definitions for critical terms used throughout. These terms are also defined in-context through side annotations on relevant pages. To keep the print version manageable, the glossary and resources were removed.

Takeaways

As a result of reflecting on the process of developing this principles document, takeaways about international and interdisciplinary collaboration and digital composition emerged with several implications for the field.

Creating an Interdisciplinary Document for Praxis

Undoubtedly, the diversity of the task force team members was a strength in the first year. As the principles began taking shape, interdisciplinary, international, and cross-institutional perspectives led members to consider issues of digital ethics and professional communication that would not have been encountered without the assorted backgrounds of the members. Many hours were spent discussing how various audiences with different purposes might use these principles and how the document's organization and language could facilitate usability for diverse readers. In deciding terminology, for example, the interdisciplinarity of the team revealed how some terms did or did not work across different international and professional contexts. For instance, the term "educator" originally existed as "faculty," "instructor," "tutor," and "teacher." Ultimately, educator had the ability to include multiple teaching positionalities and transfer across international and professional contexts while other terms were less familiar across different contexts or took up unintended connotations in those contexts.

Similarly, the team's interdisciplinarity enriched its ability to focus on different aspects of digital ethics, a topic that is both capacious and dynamic. Having such a diverse set of task force members expanded our thinking to consider a wide range of contexts and use

cases. These contexts stretched across student populations, academic disciplines, and institution types. We are not surprised at the extent to which interdisciplinarity and member diversity positively impacted the task force.

Moving forward, collaborative efforts like the task force must be intentionally designed to include diverse voices and perspectives. As ePortfolio scholarship becomes more international and diverse, creating inclusive representations of the field is vital, especially with regards to issues of digital ethics. COVID-19 has brought to bear an important reminder: issues of digital access, digital agency, and digital ownership intersect with international systems of inequity. If we want ePortfolio scholarship to provide a rich and nuanced portrait of ePortfolio practices and theory, then we must ensure that the voices in our field constitute and reflect the diversity of ePortfolio practitioners.

The Role of Hypertextuality in Creating Documents on ePortfolios and Digital Ethics

The task force also reflected on the unique nature of a principles statement related to ePortfolios and focused on digital ethics. While many of the national statements reviewed were produced in print publication and heavily text-based, a principles document related to digital topics—ePortfolios and digital ethics—should be multimodal and digital, taking advantage of the affordances of hypertexts. First, producing the principles as hypertext would allow the document to be "living," in that it could continuously be revised and updated as new issues and resources emerged within digital ethics. Second, building the principles in a digital format allowed it to more easily utilize visuals, design, and hyperlinks to honor the interactive media that are often used in ePortfolios to create what Yancey (2004) called "web sensibility" (p. 746) and flexibility in how to read and engage with the text.

Third, from a practical standpoint, creating a webtext also led to a more manageable document. In developing the first version of the principles, an extensive list of standards, strategies, scenarios, and resources were drafted. This list would only continue to grow as more areas of digital ethics were added to the resource. Digital composition allowed a nested structure so that sections were balanced and usable yet also detailed in the guidance on practice. However, despite these affordances, there was one limitation to creating a webtext. Platforms could internally record a document history that could be accessed by creators, but the evolution of the document over time would be largely lost to readers. Documenting the evolution of the principles required a print version of the principles to be published in an abbreviated format alongside an article that could provide insight into the creation process.

As a final note on the value of hypertextuality, creating this document further allowed the task force to practice the digital creation process that students and professionals engage in as they complete ePortfolios. Reynolds et al. (2019) mentioned the divide between an ePortfolio scholar and practitioner in their article, which detailed their experiences building and revising their own professional ePortfolios. Engaging in digital composition forced members of the task force to learn new technologies, weigh choices in design, and reflect on audience experience and usability. More importantly, we confronted many of the digital ethical issues on which we were writing: in considering our platform, we assessed accessibility standards and looked to End User Licensing Agreements for policies on data collection and ownership. We chose to articulate standards for re-use and attribution in the hypertext's footer. We participated in the digital ecology in ways that are unlike writing a traditional print publication. However, task force members in higher education questioned whether or not our institutions would recognize this digital publication as scholarship and wondered how to communicate the labor and importance of this work to systems that value print forms of scholarly communication. For that reason, as a field, if we want to align our scholarly practices with the digital labor that we ask ePortfolio creators to engage in, more work is needed to justify and recognize digital scholarship by professional stakeholders.

Digital Ethics as a Capacious Area for Research and Study

Unsurprisingly, we found it difficult to capture the full range of digital ethics issues as they relate to ePortfolios in only one year of work. The current set of principles identifies 10 areas of digital ethics: institutional support, awareness, digital literacies and practice, author rights, access, privacy, content storage, cross-platform compatibility, accessibility, and consent for data usage. These 10 areas represent a foundation that any new ePortfolio administrator, educator, or practitioner must be aware of. This list of principles will continue to grow in the task force's second year.

Because so little work exists on digital ethics in ePortfolio scholarship, it was a challenge to consider how existing regulations and issues related to digital ethics broadly could apply to ePortfolio practice specifically. As a field, we must continue to investigate areas of digital ethics with respect to ePortfolios. This call for additional scholarship becomes especially important as some trends in higher education move toward mass student data collection, predictive analytics, and surveillance technologies. If we are to claim that ePortfolios offer ePortfolio creators meaningful spaces to learn, reflect, and theorize their professional identity, we cannot ignore the real risks

that exist within digital spaces. Thus, the field must continue to engage in research at the intersection of ePortfolios and digital ethics.

Looking Ahead

In acknowledging that this work is not done, we are proud of how the diversity of the task force led us to deeply consider purpose, audience, format, organization, and language with an eye toward interdisciplinary and international application and praxis. The second year of the task force will expand the document to include digital ethics topics that we were unable to take up in the first version of the document: assessment, diversity and equity, legal issues, and labor. Additionally, the existing principles will be revised and updated with new resources and strategies that have come to light in the age of COVID-driven online instruction.

To do this work well, a diverse set of perspectives must be recruited to serve on the task force, including members from different international, institutional, and professional contexts in addition to individuals who hold positionalities that offer much needed perspectives. For example, (a) students making ePortfolios or involved with ePortfolio programs at their institutions; (b) professionals and educators from underrepresented racial and ethnic communities, disability communities, first-generation communities, and transnational or translingual communities; (c) professionals or educators from different disciplinary or professional contexts; (d) educators holding contingent, non-tenure-track, staff, or graduate assistantship positions; and (e) educators with institutional or regional perspectives currently missing from our task force membership.

Conclusions

The AAEEBL Task Force on Digital Ethics in ePortfolios has provided an important and timely contribution to digital ethics discussions globally. The output resource, *Digital Ethics Principles in ePortfolios: Version 1* (Cicchino et al., 2020), supports ePortfolio decision-making and practices across different locations and contexts, enabling important principles, strategies, scenarios, and additional resources to be accessed both interactively and in text formats. Further, the collaborative nature of the task force team enriched the development process, preempting a similar process and outputs for the second year of the task force. This second task force will continue to develop resources for the sector in a time when higher education institutions are recovering from COVID-19 teaching and looking for available digital ethical literacy resources.

A primary intention of the principles is to serve as a vehicle for recursive, reflective practice—a kind of window and mirror to prompt the dynamic process of reflection while stakeholders are in the process of composing ePortfolios that are contextually situated. The principles are designed not only to evoke individualized reflection by the stakeholder but also to encourage reflection writ large for practitioners across higher education. ePortfolios are constantly evolving with the advancement of digital technologies and the socio-cultural laws and conventions that govern digital spaces. In responding to constantly shifting digital environments, digital ethics documents (e.g., the first version of these principles) must be designed to provide stakeholders with tangible strategies for confronting issues of digital ethics in the moment while also looking through these moments to glimpse changes that are just beyond the horizon.

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Appendix
Digital Ethics Principles in ePortfolios: Abridged Version

As outward-facing ePortfolios become more common, students, educators, administrators, and staff need guiding principles to ground their ePortfolio practice. Beginning in 2018, the AAEEBL community highlighted a need for a practical and applicable guide for practitioners on the topic of digital ethics. The Digital Ethics Task Force was created out of this discussion and has developed this resource to guide anyone involved in administering, teaching, creating, or practicing ePortfolios, including students, professionals, educators, administrators, staff, and platform providers.

The document is divided into 10 principles relating to digital ethics and ePortfolios. Each principle consists of a description, a scenario of how the principle may be applied, and a rationale to contextualize the scenario. Additional scenarios and resources for each principle can be found in the full hypertext Digital Ethics Principles document.

This document was created by the AAEEBL Digital Ethics Task Force: Amy Cicchino (Auburn University), Megan Haskins (Auburn University), Megan Crowley-Watson (Edward Waters College), Elaine Gray (Appalachian State University), Morgan Gresham (University of South Florida), Kristina Hoeppner (Catalyst, New Zealand), Kevin Kelly (San Francisco State University), Megan Mize (Old Dominion University), Christine Slade (University of Queensland), Heather Stuart (Auburn University), and Sarah Zurhellen (Appalachian State University)

Principle 1: Support
Institutions should provide appropriate support for students, educators, administrators, and staff who create ePortfolios.

ABSTRACT: Institutions must devote resources to supporting ePortfolios, including professional development in ePortfolios. ePortfolio stakeholders are encouraged to partner with offices that have expertise in disability, informational literacy, technology, writing, and teaching and learning to create inclusive ePortfolio requirements with built-in alternatives for individuals with limited access to technology and the internet.

Strategies for applying this principle include…

- Adequately funding and evenly distributing the responsibility for developing, teaching, and assessing ePortfolios throughout the program, department, college, and/or institution.
- Developing and providing training and support on digital ethics, digital citizenship, and effective pedagogical and assessment strategies for educators, staff, and program directors who work with students on ePortfolios.
- Developing clear ePortfolio requirements so that all students can be successful, especially students who have little to no experience with ePortfolio-building technologies.
- Providing alternatives for financially disadvantaged students who cannot afford the costs associated with certain ePortfolio platforms and/or technologies or do not have access to a stable internet connection.
- Identifying institutional resources and partners for ePortfolio support, such as the office of accessibility, librarians, reading/writing/learning centers, technical support, etc.

Scenario: You are a writing program administrator and/or staff member, and your dean has recently asked you to bring ePortfolio assessment into the composition program. You are excited at this possibility, as you have heard about ePortfolios at conferences and in academic journals in your field. However, when you ask about funding for this initiative, your dean says you will have to use your current budget. Your program is staffed mostly by part-time and non-tenure-track professionals who carry high teaching loads and already have limited access to professional development funds.

After taking a moment to process the situation, you explain to the dean that an ePortfolio requirement is an exciting, but sizable, commitment. You suggest reaching out to peer institutions that use ePortfolios to understand how much money they spend annually on staff, technology, professional development, assessment, curriculum

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Principle 4: Respect Author Rights and Re-Use Permissions

ePortfolio creators should understand and respect author rights, best practices for re-use, and representation.

ABSTRACT: Because ePortfolios ask creators to re-use text and media, they need a working knowledge of plagiarism, copyright, fair use, and licensing. Students should be ethical owners of their ePortfolios and engage in conversations about how to responsibly move artifacts into ePortfolios, particularly when artifacts represent professional or collaborative experiences or involve the representation of others.

Strategies for applying this principle include*…*

- Advocating for student ownership of ePortfolios and ePortfolio portability post-graduation.
- Ensuring ePortfolio creators are aware of how the ePortfolio will be used by an institution or employer (e.g., for institutional assessment), and obtaining consent from students for this re-use.
- Distinguishing among concepts related to plagiarism, attribution, citation, copyright, fair use, and licensing.
- Demonstrating how to attribute sources according to disciplinary, professional, institutional, and cultural standards, as well as genre conventions, to avoid accusations of plagiarism.
- Identifying situations in which ePortfolio creators can argue fair use within their institution/culture.
- Becoming familiar with various licensing agreements regarding re-use of resources and knowing how to apply an appropriate Creative Commons license to an ePortfolio to guide its re-use.
- Being thoughtful in how to represent others' identities and ideas, including the use of photos, collaborative projects, and work authored and owned by others. This includes sharing artifacts that disclose others' personal information only when you have the legal right and personal permission to do so.
- Considering how representing others in an ePortfolio can be shaped by social and cultural biases and being rhetorically thoughtful in selecting and contextualizing artifacts.
- Asking professional organizations about using work completed in internships, employment, and work-for-hire before featuring these artifacts in an ePortfolio in case information is proprietary or protected. When negotiating these professional relationships, you should ask about featuring the work you are doing in your professional ePortfolio.
- Providing specific information for students and educators who work with protected and/or vulnerable groups, such as children, patients, clients, etc., and who may include information about this work in their ePortfolios.

Scenario: You are a student who is excited to design your ePortfolio. You decide to include artwork from your favorite street artist alongside your bio on the homepage. While the artwork does not have a re-use license at the bottom, you decide to use it anyway. You attribute each piece of art individually at the bottom of the page in APA format with a link to the artist's website. However, when you show your ePortfolio to your educator, you are accused of breaking copyright law.

You are confused—there's a full citation at the bottom of the page. While much of your academic career has prepared you to navigate attribution and citation, very little time has been spent on copyright. Your educator asks you to reconsider the homepage design. Specifically, they ask you to reflect on the following questions: is the artwork used in such a way that you can argue fair use? Should you replace this artwork with artwork from the public domain or artwork with clearer re-use licensing? What are the potential risks if you keep the page's design as-is?

After concluding that this artwork is protected by copyright and you are not using it in a way that suggests fair use, you redesign the page to include an open-access work instead. You still clearly attribute this work to its creator but know that you have permission to re-use it on your personal ePortfolio.

Scenario Rationale: Access to the internet provides users with a vast array of valuable resources, information, and media. Unfortunately, many users are not taught about the responsibility they hold to consider how they use and reuse other people's work. When assigning ePortfolios and other digital work, educators should ensure that their students receive guidance on the use, re-use, and representation of others' works. To do so, educators should provide guiding questions to help learners make good decisions about what they share and how, along with links to resource collections and media galleries that support responsible re-use.

Principle 5: Access to Technology

Adequate access to technology must be available for all students, and ePortfolio software should be accessible with institutional devices.

ABSTRACT: Students with limited access to technology or the internet should still have opportunities to create ePortfolios using institutional resources. An inclusive ePortfolio curriculum accommodates students who need to build their ePortfolio on a smartphone or gives students access to technology or the internet via institutional resources.

Strategies for applying this principle include…

- Recognizing that not all students own laptop or desktop computers and may rely on mobile phones and campus computers (available in libraries, labs, etc. at various hours).
- Ensuring that hardware, software, and ePortfolio platforms and support are readily accessible to account for students' diverse schedules.
- Providing students and educators with training, technology support infrastructure, and resources (e.g., samples of successful ePortfolios, tutorials, resources on digital ethics, universal design, etc.).
- Making an institutional commitment to providing adequate proactive support (initial training, tutorials, examples) as well as reactive support (e.g., help desk support) for educators and students.

Scenario: You are a part-time student attending courses after your normal work hours. As part of your capstone course, you are asked to create an ePortfolio. While you have a desktop computer at work and know some desktop computers are available to you at the library, you do not have access to a computer at your home—although you have an iPad and a smartphone. Moreover, the library has limited hours. When you talk to the professor after class and explain this situation, they already have a plan in place to meet your needs.

The professor has technical support resources from the ePortfolio platform provider specifically tailored to people using a tablet or smartphone and out-of-class activities have also taken a variety of devices into account. More so, your professor has a list of local libraries with weekend and extended night hours that you can use to work on the ePortfolio and directions for checking out hardware to take home from the university library. While the professor does have on-campus office hours during the day, there are also options for distance participation in these through web or phone conferencing. You are relieved that your educator has already considered your situation and excited to begin the ePortfolio.

Scenario Rationale: Campuses work hard within their budgets to offer a variety of technology access solutions. However, there are still a significant number of students who do not have reliable or consistent access to a device and/or a stable Internet connection. This equity issue has been amplified by campus closures due to hurricanes, wildfires and a global pandemic. Institutions must consider how to help students get the technology they need, while instructors must create assignments that can be completed from any device.

Principle 6: Privacy

ePortfolio creators should have ultimate control over public access to their portfolios and the ability to change the privacy settings at any time.

ABSTRACT: Students should be able to alter and explain their privacy and sharing settings as owners of their ePortfolios. Administrators, educators, and staff must be prepared to have these conversations with students.

Strategies for applying this principle include…

- Becoming familiar with all privacy settings available in the ePortfolio system, such as the ability to make an ePortfolio password-protected or "shareable" but not public.
- Prioritizing tools that optimize customization of permissions and permit page-level permissions.
- Acknowledging that how ePortfolio platforms interact with third parties can challenge students' right to privacy.
- Preparing educators, administrators, staff, and students to understand the ways in which student privacy might be challenged via data mining, tracking, etc.

- Balancing the ePortfolio creator's right to privacy and the efficacy of the ePortfolio program's sharing capabilities.

Scenario: You are a student. You have a portfolio component in a number of your courses this term. Depending on your class, you are asked to create different types of portfolios. In one class, you create a portfolio for assessment purposes, in your internship requirement you create a developmental portfolio, and for your writing class, you create a showcase portfolio that you can share with future employers.

For each different portfolio purpose, you can define the audience who shall have access to it, as not everything can be shared publicly. Your internship mentor, for example, does not want any confidential data to be made public and only allows you to include images if the portfolio is shared only with your internship advisor at your institution. In contrast, your showcase portfolio is going to be public, allowing you to share it widely with future employers. You are conscious of only including multimedia content and reflections that follow your institution's copyright guidelines and agreed on terms with people that appear in that content. You want to feature an experience you have working in a biology lab in this showcase portfolio. When talking about experiences you have working in the lab, you also do not publish confidential data but rather focus on the transferrable skills that this experience has taught you.

Scenario Rationale: This scenario highlights how we collectively ask students to gather their work, reflect on it in relation to a specific context (academic, co-curricular, career bridging), and share it with a specific audience. Therefore, as programs or institutions choose ePortfolio tools for students to share their work, they need to consider those with more flexible privacy permission capabilities to allow students to share different representations of themselves with different stakeholder groups. The work does not stop there. Educators must also make students aware that those permissions exist and show students how to change them. Only then will students truly have control over who can access their work and their reflections on it.

Principle 7: Content Storage

ePortfolio creators should know where their content is stored, who has access, and how to remove it.

ABSTRACT: Before working in an ePortfolio platform, students, educators, administrators, and staff should review the Privacy Policy and Terms and Conditions with particular attention to how the platform will collect, store, and use data and if students can opt out of data collection or remove their data. Providers should communicate these details in clear and accessible language.

Strategies for applying this principle include…

- Reviewing the Terms and Conditions and Privacy Policy (and other relevant documents) of the ePortfolio site and seeking counsel, e.g., at your institution, if you are not clear whether the site is safe or appropriate to use.
- Identifying how the provider will collect and use your personal data, whether you can opt out of data collection, and how you can remove your data *before* creating an account on the ePortfolio-making platform and adding content.
- Recognizing that deleting your account does not mean your user data will be removed from data repositories *unless the end user license agreement says this.*
- Considering how complex, time consuming, or costly the portfolio transfer process is, if there is one.
- Informing students on how the institution, vendors, and/or website hosting system may preserve or share their ePortfolio information with other parties, systems, or entities.
- Sharing guidelines on data ownership, storage, and sharing in clear and accessible end user license agreements.

Scenario: You are a program administrator and/or staff member who has been asked by your institution to start a campus-wide ePortfolio initiative as part of its Quality Enhancement Plan, a measure tied to institutional accreditation in the southeastern United States. There is nobody at your institution who regularly vets technologies intended for teaching and learning, and you have limited knowledge of ePortfolios and suitable platforms in general. When you gather a committee to consider different ePortfolio technologies, you make a list of priorities: students' ability to edit and share their ePortfolios both as students and after they leave the institution, universal design

practices for creators and viewers, privacy capabilities for authors, and minimal direct cost to students. However, the committee soon realizes it has thought very little about use of student data, which is a big concern.

As a committee, you develop a series of criteria related to student data and privacy and their acceptable options. These criteria will help eliminate some potential ePortfolio platforms. These questions include the following:

- Does the platform collect identifiable or de-identified personal information?
- Where is data stored, and how is this data protected?
- Does the platform sell this data to third parties?
- Is user data collected/used/shared for non-authorized purposes?
- Can the user remove their data, and what is the process by which they do that?
- How does the platform inform users of changes to their EULA?
- Are vendors held to equitable standards for privacy and data collection/storage?

If students choose their own platforms for ePortfolio creation, you provide resources that inform them about potential platforms and how each platform collects, uses, and stores user data.

Scenario Rationale: Many campus-wide ePortfolio initiatives begin by investigating the academic needs across all programs at an institution. Programs interested in participating then share desired functions and features for the Request for Proposals process. Again, these usually relate to those programs' academic needs and sometimes include features for career bridging. It is critical at this stage to consider who owns and who has access to the students' content, their profile information and metadata, and even the server logs that capture their activity patterns over time.

Principle 8: Cross-Platform Compatibility

ePortfolio creators should be able to make and view ePortfolios across any device, browser, and operating system with equitable ease of use across devices.

ABSTRACT: ePortfolio platforms should operate across devices and operating systems from both the creator and viewer perspective. ePortfolio creators should have the technical knowledge to create ePortfolios that are readable across devices.

Strategies for applying this principle include…

- Considering how all aspects of ePortfolio use function across platforms and mobile operating systems, including uploading, viewing, listening, downloading, embedding, and sharing.
- Considering ease of use and whether the student will use an application or a web browser to access their ePortfolio on a mobile device.
- Providing students with the technical support that they need to use the ePortfolio platform across devices.
- Questioning whether or not other users, such as employers, would need to download an application to review or interact with the ePortfolio.

Scenario: You are an educator who has asked your students to complete an ePortfolio as part of a capstone course. Students have already selected artifacts from their learning and co-curricular experiences to include in the ePortfolio but have not yet begun creating and filling the actual site. You distribute a survey to students to identify how comfortable they are using digital devices, if they have used the ePortfolio platform before, and how familiar they are with ePortfolios as a genre. You discover that while students use digital devices often for social media, few have created a website and none know what an ePortfolio is. On the first day exploring the platform, you observe students struggling to make minimal changes to the premade template.

You need to provide students with additional support in how to use the ePortfolio platform: (1) explicitly support the technical knowledge needed in the ePortfolio creation process in the course; (2) put students in contact with institutional, local, or public experts; (3) create classroom spaces for students to share peer knowledge and ask each other questions across a learning community. You should also discuss students' unfamiliarity with ePortfolios with the program administrator and/or staff member to see how students can learn about ePortfolios before entering the capstone course.

Scenario Rationale: As educators, we can adopt the common misconceptions that every student has the technology they need and the knowledge to use it in the educational setting. It is important to help students address the needs of different people who will review their ePortfolios on a variety of devices. Hopefully, this is work students can do

with the platform used by your program or institution. If not, you may have to facilitate a conversation with your learners about cross-platform friendly alternatives.

Principle 9: Accessibility

All ePortfolio platforms and pedagogy should be thoroughly vetted for accessibility according to the standards identified by one's culture, government, or profession.

ABSTRACT: ePortfolio platforms should be accessible to diverse creators as well as diverse audiences. Stakeholders should test platforms for accessibility, and educators and students should be educated about accessible content creation.

Strategies for applying this principle include…

- Recognizing that technologies are not always designed with all students in mind, and accessible platforms benefit all users.
- Recognizing that it isn't enough to rely upon a particular software company's assertions regarding accessibility. Decision-makers and other stakeholders should test accessibility prior to purchase or deployment of any ePortfolio platform. This can be done in cooperation with institutional partners, e.g., the Office of Inclusion and Disability (or similar) and affected students and staff.
- Including training so that educators, administrators, and staff understand accessibility standards when selecting ePortfolio tools and creating content.
- Preparing students to practice accessible design for diverse ePortfolio viewers.

Scenario: You are a student participating in an internship as part of your work-integrated learning requirement in your Hospitality Management program. Your position as sous-chef in your favorite restaurant in town gives you rich learning opportunities, and you want to document these experiences not just in text but also in multimedia content. Your internship mentor is okay with you taking photos and video of the kitchen and your work to share in your portfolio.

During one of the introductory sessions to the ePortfolio work for your internship, you learned about creating accessible content so that people with differing abilities can read your portfolio and comment on it. Therefore, when you upload photos of the dishes you created, you provide appropriate alternative text descriptions that screen readers can access. When you use video to take viewers through the process of creating a dish or reflecting on a task, you make a transcript or summary available as text that you place next to the video. While this adds work to your portfolio creation process, it also helps you think about your audience, how your portfolio is viewed, and how you can express your ideas and reflections in an effective and concise manner.

Scenario Rationale: Institutions or programs should include accessibility requirements for users with disabilities when they go through the procurement process to adopt and implement an ePortfolio platform. Accessibility does not stop with the platform, though. Students need to know how to address a variety of accessibility accommodations for text documents, images, videos, and other media. Those accommodations usually support a large number of people, not just those with dis/abilities.

Principle 10: Consent for Data Usage

ePortfolio platform providers need consent to collect and store data from ePortfolio creators.

ABSTRACT: ePortfolio platform providers should explain their data collection, storage, and use policies in clear and accessible language. These policies should comply with applicable institutional regulations. When these policies change, platform providers should have mechanisms in place for students and staff to review the changes and decide whether they want to keep their portfolios under these changed circumstances.

Strategies for applying this principle include…

- Clearly identifying and explaining how ePortfolio platform providers plan to collect and use student data, whether students will be able to opt out of data collection, and how they will inform the institution and platform users of changes to their licensing agreements.

- Making ‘use of student data’ a criterion for platform selection when negotiating contracts or informing students about data use when allowing them to choose among platform options.
- Being aware of and complying with federal and state regulations regarding student data use and privacy.

Scenario: You are an educator. In selecting ePortfolio platform providers, your institution has made data collection a priority. This gives you relief. However, when you are developing ePortfolios with your students, you see that some features of the ePortfolio platform ask students to use other tools. For instance, to embed a video on their ePortfolio page, students are prompted to upload the media to YouTube and then use a plugin to embed that video onto their page.

When you look into YouTube’s EULA, you find it is very different from the platform provider’s EULA. Importantly, it collects user data and users have to alter their YouTube privacy settings to opt out of some forms of data collection. You are confused: are your students protected by the ePortfolio platform’s EULA, or are they subject to YouTube’s EULA because they are using this tool within the platform?

You reach out to your institutional technology resources for clarification and create a short resource for students that explains use of tools within another platform and how that can affect their privacy and data security.

Scenario Rationale: Educators should work with their campus technology team to become familiar with how the ePortfolio platform and any other connected environment use students' data. Based on that work, the program or institution should create resources that outline students' rights and suggest effective practices to protect themselves as they work in environments that may seek to use students' data beyond their comfort levels.