ePortfolios: A 360-Degree Approach to Assessment in Teacher Education

Les portfolios numériques : une approche à 360 degrés de l'évaluation dans la formation des enseignants

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Abstract

ePortfolios are increasingly being used for teaching, assessing, and supporting students' learning in higher education. With COVID-19 having forced many higher education institutions to move their education services and teaching to online spaces, ePortfolios have become more relevant in the assessment process as they are web-based. This self-study examines how ePortfolios are being used to support assessment practices in a South African and a Canadian teacher education program. Data comprised critical dialogue, notes, reflections, and conversations with students enrolled in both teacher education programs. Findings suggest that students use ePortfolios to integrate self, peer, and teacher/expert feedback, which results in a 360-degree approach to assessment.

Keywords: assessment, ePortfolio, online learning, teacher education

Résumé

Les portfolios numériques sont de plus en plus utilisés pour enseigner, évaluer et faciliter l'apprentissage des étudiants dans l'enseignement supérieur. Lorsque la pandémie de COVID-19 a contraint de nombreux établissements d'enseignement supérieur à offrir leurs services éducatifs et leur enseignement en ligne, les portfolios numériques sont devenus essentiels dans le processus d'évaluation puisqu'ils étaient accessibles sur le Web. Cette étude de cas se penche sur la manière dont les portfolios numériques sont utilisés pour améliorer les pratiques d'évaluation dans le cadre de deux programmes de formation des enseignants, en Afrique du Sud et au Canada. Les données comprennent un dialogue à visée critique, des notes, des réflexions et des conversations avec des étudiants inscrits dans deux programmes de formation d'enseignants. Les résultats suggèrent que les étudiants utilisent les portfolios

numériques pour intégrer leurs propres commentaires, ceux de leurs pairs et ceux des enseignants ou des experts. Il en résulte une approche à 360 degrés de l'évaluation.

Mots-clés : évaluation, portfolio numérique, apprentissage en ligne, formation des enseignants

Introduction

ePortfolios are increasingly being used for teaching, assessing, and supporting students' learning in higher education, especially in the field of teacher education (Cahill et al., 2022). With COVID-19 having forced many higher education institutions to move their education services and teaching to online spaces, ePortfolios have become more relevant as they are web-based and can be used to assess and support students' learning in various educational contexts.

Like many concepts in education, a variety of definitions of ePortfolios are found in literature. As ePortfolios became more widespread, Farrell (2020) argues that "educators began to articulate, theorise and develop the concept of electronic portfolio assessment in higher education" (p. 292). Most often, the definitions of ePortfolios include the functions of ePortfolios, which include storage, reflection, documentation, collaboration, showcase, and assessment (Farrell, 2020).

McLoughlin and Lee (2009) define an ePortfolio as an electronic collection comprising self-assembled evidence demonstrating a learner's knowledge, skills, and abilities, including learner-generated artifacts in multiple media forms that showcase both the products and processes of learning. An ePortfolio is also defined by Hallam et al. (2008) as an evolving electronic/online resource that acts to record, store, and archive the artefacts of learning and reflection for an individual learner. In essence, an ePortfolio is a digital space for teaching and learning which supports reflective, personalised, and collaborative learning. This is a virtual environment that allows for the purposeful presentation and reflection on evidence of learning through a collection of various multimedia artefacts linked to the learning outcomes.

ePortfolios are digital tools that serve as authentic formative assessments. They offer students the opportunity to integrate learning across stages, showcase learning artifacts, record reflective learning processes, and receive regular feedback for developmental purposes (Yang et al., 2015). A typical learning ePortfolio may include both academic materials and personal profiles of students. This becomes "more than a product, a simple repository of artefacts; it becomes a process of reflection, of organizing, prioritizing, analysing, and communicating one's work and its value, which may prompt insights and goals" (Corley & Zubizarreta, 2012, p. 64).

The term "assessment" in higher education often conjures different sentiments and emotions. From a teacher's perspective, Ramsden (2003) states that assessment involves "getting to know our students and the quality of their learning" (p. 180). Conrad and Openo (2018) suggest that assessment fundamentally shapes learning approaches and reveals the educational experience's qualitative nature. Yet when students in a teacher education program were asked to use one word to describe their perceptions of assessment, the four most common words were *fear*, *stress*, *anxiety*, and *judgment* (Vaughan, 2013).

This disconnect between teacher and student perceptions regarding assessment is a serious issue, especially since several educational researchers have clearly linked student approaches to learning with the design and associated feedback of an assessment activity (Biggs, 1998; Hedberg & Corrent-Agostinho, 1999; Marton & Saljo, 1984; Ramsden, 2003; Thistlethwaite, 2006). For example, standardized tests with minimal feedback can lead to memorization and a surface approach to learning; in contrast, ePortfolios can encourage dialogue, richer forms of feedback, and deeper modes of learning (Penny Light, 2016). In addition, a report by the International Commission on the Futures of Education (2021) advocates that assessment needs to evolve from a mode of compliance to a process of shared goal setting, which leads to growth. This is particularly important in a teacher education program where teacher candidates develop their professional identity and ability to provide meaningful assessment for K-12 students.

This focus on development is closely aligned with some Indigenous perspectives on assessment. Claypool and Preston (2011) state that Euro-American-centric assessment practices focus on written quizzes, tests, and exams, which primarily promote cognitive development via rational, linear, and accountable activities. They suggest that this approach to assessment is focused largely on meeting curricular outcomes, and it tends to neglect the physical, emotional, and spiritual domains of students. From an Indigenous perspective, Marule (2012) suggests that effective assessment utilizes practices that include the cognitive domain but focus equally on physical, emotional, intellectual, and spiritual growth.

The purpose of this self-study was to investigate how ePortfolios are being used to support assessment practices in a South African and a Canadian teacher education program.

Background Literature

Poole et al. (2018) point out the challenges and supports regarding integrating ePortfolios in education, emphasizing the formative assessment aspects and the collaborative discourse between teachers and students. These include equity of broadband access coupled with the disconnect between ePortfolios and the curriculum that must both be addressed before ePortfolios become a common feature of developing countries' educational landscapes. Harver et al. (2019) argue that support services and faculty development are the best tools to combat the challenges of adopting ePortfolios.

However, the implementation of ePortfolios has been found to have many benefits, including facilitating reflection, self-assessment, and professional development among teacher education students (Farrell & Seery, 2019; Hauge, 2021). Slepcevic-Zach and Stock (2018) highlight the influential role of ePortfolios as a tool for self-reflection. Furthermore, research indicates that ePortfolios have been employed in teacher education programs for various goals, including assessment, teacher development, and support for placement experiences (Farrell et al., 2021). ePortfolios for formative assessment are centred on a "collaborative, continuous discourse between teacher and student" (EUfolio, 2015). In a South African study, Van Wyk (2017) explored student teachers' views on ePortfolios as an empowering tool to enhance self-directed learning in an online teacher education course, emphasizing the use of ePortfolios to enhance personal growth, professional development, and to produce evidence for daily representations of teaching practice.

Haralabous and Darra (2018) explored the correlation between ePortfolios and student self-evaluation and alternative assessment in elementary education, focussing on the trends and viewpoints of primary school teachers relating to the "implementation of the ePortfolio as an alternative form of student assessment and as a tool for self-assessment by students" (p. 80). However, the overwhelming majority of these teachers state that they have little or no knowledge of ePortfolios (Haralabous & Darra, 2018; Modise & Mudau, 2023). Before advances can be made in ePortfolio integration into education, there needs to be a clearer understanding of the goal and function of ePortfolios as a tool for achieving learning outcomes (Modise & Mudau, 2023; Poole et al., 2018).

ePortfolios have been used to support assessment practices in South African and Canadian teacher education programs. Farrell et al. (2021) emphasize the evolution of ePortfolio assessment from a modular to a programmatic approach and as a capstone culminating experience at the end of a degree within the education landscape in Ireland. Farrell et al. (2021) found that Irish educators primarily utilize ePortfolios with their students for assessment, reflection, placement support, and developing employable skills. They further indicate that the implementation and adoption the ePortfolio approach by Irish higher education institutions has been quite uneven, with most institutions reporting to be at the early stages of adoption. In South Africa and many developing countries, higher education contexts are no different, where online teaching is generally still in its infancy (Ng'ambi et al., 2016).

Theoretical Frameworks

This study is anchored in the following theoretical perspectives:

1. Community of inquiry (Garrison, 2017).

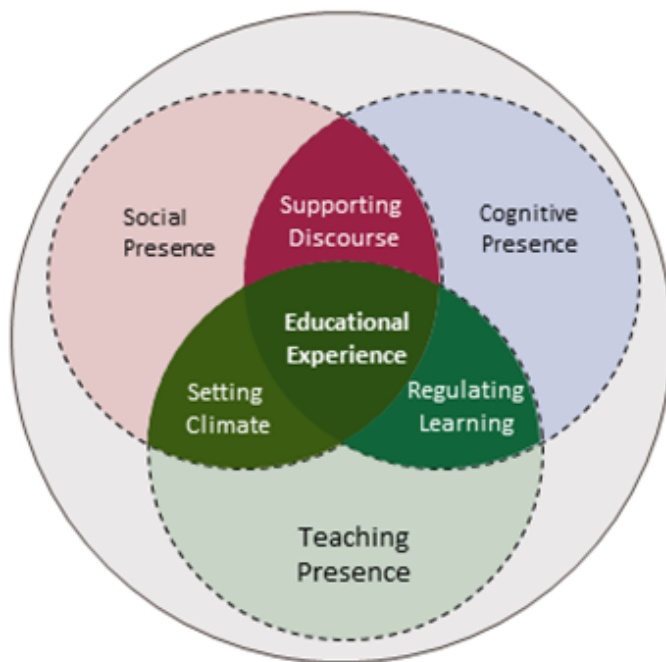2. Self-study in teacher education (Hauge, 2021).

"An educational community of inquiry is a group of individuals who engage collaboratively in purposeful critical discourse and reflection to construct personal meaning and confirm mutual understanding" (Garrison et al., 2024, "CoI Framework" section). The Community of Inquiry (CoI) theoretical framework was derived from higher education literature. It is a generic educational model applicable to various educational contexts and modes of communication. Although it has been used to study and design online educational experiences, it is just as applicable to collaborative and meaningful face-to-face inquiry. For this reason, it is effective in designing digital technology approaches to assessment (Garrison & Vaughan, 2008; Vaughan et al., 2023).

The three key elements or dimensions of the CoI framework are social, cognitive, and teaching presence (Figure 1). It is at the convergence of these three mutually reinforcing elements that a collaborative constructivist educational experience is realized. Social presence creates an environment for trust, open communication, and group cohesion. Cognitive presence is "the extent to which learners can construct and confirm meaning through sustained reflection and discourse in a critical community of inquiry" (Garrison et al., 2001, p. 11). It has been operationalized through the developmental phases of inquiry: triggering event, exploration, integration, and resolution. The third and cohesive element, teaching presence, is associated with the design, facilitation, and direction of a community of inquiry. It is the unifying force that brings together the social and cognitive processes directed to personally

meaningful and educationally worthwhile outcomes. Research studies have demonstrated that a high level of teaching presence is a good predictor of student success and satisfaction in a blended or online course (Shea et al., 2010; Torras & Mayordomo, 2011; Zhang et al., 2016; Zhao & Sullivan, 2017).

Figure 1

Community of Inquiry Framework (Garrison, 2017)

Hauge (2021) indicates that self-study in teacher education is the study of oneself and one's own practice and involves a moral commitment to improving this practice. A dedicated teacher, according to Celik and Yildiz (2017), is never content with what they already have and is constantly looking for new concepts and methods to help their students. Additionally, they argue that a committed teacher possesses passion and enthusiasm for both teaching and learning and that this devotion directly affects the students' academic performance and personal growth. The committed teacher may feel morally obligated to continuously improve their knowledge and skills, thereby improving the teaching practice. Teaching and learning with ePortfolios require that both students and teachers actively reflect on their journeys and thus continuously look for ways to enhance their teaching and/or learning.

Bullough and Pinnegar (2004) add that self-study can be used in relation to teaching and research on practice with the intention of the better understanding of both oneself as a teacher educator, and the development of knowledge related to these factors. Self-study refers to teacher educators who intentionally and systematically examine their practice to improve it, based on a deeper understanding of the practices and the contexts where the practice takes place (Vanassche & Keltcherman, 2015). Such an approach to self-study can be characterized as a specific form of action research (Hauge, 2021). ePortfolios have been dubbed effective self-reflective tools by educational researchers (Bodle et al.,

2017; Slepcevic-Zach & Stock, 2018). They also play a dual role in developing self-directed learning for students (Modise & Mudau, 2023) while at the same time promoting collaborative learning (Buchholtz et al., 2018). The presence of other students and the instructors in an online learning scenario represents the opportunity for informal learning through social learning, peer learning, and formal learning through interaction with the instructor. Therefore, these two theories are well-placed to guide this study and to help unpack how the 360-degree approach to assessment can be applied in teacher education.

Methods

This section presents the study's research design, approaches, and methods used to generate and analyze data. The study is a case study design involving a self-study between two researchers in South African and Canadian universities. Our paper is situated within the interpretivist paradigm following a qualitative approach. Although the interpretive paradigm is not a dominant model of research, it is gaining considerable influence (Thanh & Thanh, 2015) because it can accommodate multiple perspectives and versions of truths (Alharahsheh & Pius, 2020; Pervin & Mokhtar, 2022; Thanh & Thanh, 2015).

Study Context

The teacher education programs at the University of South Africa (UNISA) and Mount Royal University were the focus of this self-study. UNISA is a comprehensive, open, distance e-learning university (CODEL) with 370,000 active students. As a CODEL university, UNISA offers students flexibility in choosing when, where, and how they study. The College of Education is responsible for the initial professional education and training of close to 50% of all teachers in South Africa (UNISA, 2023). The college employs various teaching and assessment tools and strategies, including educational technology, to train and prepare well-rounded student teachers in the Bachelor of Education (B.Ed.) and Postgraduate Certificate in Education programs.

Although all teaching, learning, and support activities are carried out on the university's learning management system, lecturers choose from an array of strategies, tools, and platforms to deliver the modules that they are responsible for. ePortfolios are one of the tools available to lecturers as an alternative assessment strategy (Van Wyk, 2017) and to support students' deeper learning experiences (Modise, 2021). According to Mudau and Modise (2022), ePortfolios are still a relatively new trend in developing nations; however, they are quickly evolving into an alternate teaching and learning tool for online and remote learning.

Mount Royal University is a four-year undergraduate institution located in Calgary, Alberta, Canada. This B.Ed. program was launched in the fall of 2001. Faculty and teacher candidates involved in this B.Ed. program have expressed increasing frustration with the provincial assessment framework that relies heavily on standardized testing with limited to no feedback for the learners. They have observed that local school boards have recently begun to develop an ePortfolio process to foster an increase in feedback and to encourage deeper learning modes (Calgary Board of Education, 2023).

These online learning plans allow students to take ownership of the documentation and goal setting for their own growth and development throughout their kindergarten to grade 12 educational journeys.

In order to help the Canadian teacher candidates to be "experientially" prepared for this type of learning environment, they are now required to design, organize, facilitate, and direct their own online professional learning plan (ePortfolio) throughout the entire four years of the B.Ed. program. The purpose of this learning plan is for teacher candidates to document and articulate professional growth and development related to the B.Ed. program competencies: planning, facilitation, assessment, inclusive environment, and professional roles and responsibilities. An example of a teacher candidate's ePortfolio can be accessed via this weblink: https://sites.google.com/mtroyal.ca/ryliekochsportfolio.

Both these Canadian and South African universities employ ePortfolio spaces for teacher candidates to develop and communicate self-understanding and create learning goals and strategies that will allow them to be most successful in their future teaching practice (Johnsen, 2012).

Data Collection

Aligned with key characteristics of self-study, our work was self-initiated (Hauge, 2021; LaBoskey, 2004) and involved reflecting on our personal and professional practice through ongoing and open dialogue (Samaras & Freese, 2009). This self-study involved two faculty members: one at the University of South Africa and one at Mount Royal University. We worked as a pair of critical friends (Dinkelman, 2003; LaBoskey, 2004), virtually meeting on a regular basis to discuss the relationship between ePortfolios and assessment practices in our teacher education programs. Furthermore, as self-study should "not only be of significance to the person who is conducting the study, but also of importance for creating meaning and contribute to increased understanding and knowledge for other teacher educators" (Hauge, 2021, p. 2), we were looking for implications beyond our own context and how other teacher education programs might consider using ePortfolios to support authentic approaches to assessment. Our data collection consisted of critical dialogue, notes, and reflections from our virtual meetings (Guilfoyle et al., 2004) and our conversations with teacher candidates (Fletcher et al., 2016).

Data Analysis

Data was analysed using content analysis. Qualitative content analysis is defined by Hsieh and Shannon (2005) as "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns" (p. 1278). Zhang and Wildemuth (2009) argue that content analysis emphasizes an integrated view of texts and their specific contexts, which is essential when dealing with case study research. Content analysis also makes it manageable for more than one author to simultaneously work on the same data and ensure the quality of data analysis is adhered to. Through systematic classification of data coding, key patterns in the data were discussed between the authors, and continuous member-checking was done to ensure the trustworthiness and validity of observations and interpretations (Lyons & LaBoskey, 2002). The key observations are reported in the Findings section.

Findings and Discussion

Our findings suggest that teacher candidates use their ePortfolios to receive and provide assessment feedback from a variety of sources, which includes self, peer, and teacher/experts.

Alverno College defines self-assessment feedback as "the ability of students to observe, analyze, and judge their own performances on the basis of criteria and to determine how they can improve it" (Allen, 2016, p. 4). This assessment process is often referred to as metacognition, or "thinking about one's own thinking" (Costa, 1985, p. xi). Our observations and conversations with students in our teacher education programs suggest that they are using their ePortfolios to self-assess their growth and development related to course and program competencies. For example, students are required to set their own learning goals at the beginning of a semester or field experience and then document their progress towards achieving these goals. These goals must also be aligned to the course learning goals and objectives. Our experience suggests that students have limited prior experience with goal setting and thus require guidance and support in this process. We recommend using the SMART (specific, measurable, achievable, relevant, and timely) goal approach (Bjerke & Renger, 2017).

The Foundation Coalition (2002) indicates that peer assessment allows students to provide feedback to other students (i.e., their peers). In our teacher education programs, we utilize the concept of critical friends. A critical friend is a trusted person who asks provocative questions, provides data to be examined through another lens, and offers critiques of a person's work as a friend (Lambrev & Cruz, 2021). A critical friend takes the time to understand fully the context of the work presented and the outcomes toward which the person or group is working. The friend is an advocate for the success of that work (Costa & Kallick, 1993). Depending on the context, students in our programs are either assigned or self-select a critical friend in a course or field experience. They then use their ePortfolios to provide peer feedback and support with course assignments and personal learning goals. It is a requirement for each student to have a critical friend and be a critical friend to another student. In this way, students are the receivers of constructive peer feedback and willing participants. This interaction also provides a platform for lifelong learning (Sobko & Brown, 2019).

In previous studies (Vaughan, 2013, 2014), teacher candidates identified several challenges with regards to providing peer feedback. First, several teacher candidates expressed concern about their lack of experience with peer assessment. They strongly recommended that instructors should "provide guidance and a class orientation on how to give each other meaningful feedback." Another teacher candidate suggested that there should be "opportunities for both oral and written feedback." He thought that ePortfolios were being used primarily to provide written peer feedback and that teacher candidates should also be learning how to provide oral feedback to each other. This comment was echoed by a teacher candidate who suggested that instructors should "provide class time to begin and conclude peer assessment activities." She believed that this combination of face-to-face and online interaction would help to build trust and accountability for the peer feedback process.

Teacher assessment practices in higher education are often limited to high-stakes summative assessment activities such as mid-term and final examinations (Boud, 2000). The role of a teacher should be to provide ongoing and meaningful assessment feedback in order to help students develop the

necessary metacognitive skills and strategies to take responsibility for their learning. Our experience suggests that ePortfolios allow teachers and experts (e.g., mentor or cooperating teachers in field placements) to provide ongoing formative feedback rather than just summative assessment. For example, faculty members in our teacher education programs use ePortfolios to provide students with formative assessment feedback at checkpoints or milestones for individual or group projects. This allows students to receive teacher feedback throughout the process of completing an assignment rather than just focusing on summative assessment feedback for the final product.

However, this active communication between the teacher and learners proves challenging in large classes such as at UNISA, which deals with large student numbers in a class. The use of e-tutors and teaching assistants, therefore, becomes important in supporting students further and managing online classrooms (Adams & Linschinger, 2019; Molotsi & Goosen, 2019).

Although some students may feel that they are not qualified to give feedback on their work, as seen above, some students appreciate feedback from their peers. This research shows that ePortfolios enable multiple sources of assessment feedback. For example, one student commented, "I use self-reflection for checking my work and ensuring I have everything I require for the assignment. I use peer review for a different perspective on my work, and I use instructor feedback to understand how I could improve my work." Another student stated that "self-reflection shows me what I like about my work and what needs to be improved, peer feedback provided me with comments on what could be done better, and then instructor feedback gives me ideas on how the assignment can be fixed up to get a better mark."

This study has revealed how students in our teacher education programs use ePortfolios to receive assessment feedback from multiple sources. We are discovering that students are using the digital technologies embedded in their ePortfolios to provide themselves with a 360-degree approach to assessment (Figure 2). A 360-degree approach to assessment acknowledges the three significant assessment affordances in ePortfolios, i.e., self-assessment, peer assessment, and teacher/expert assessment. The teacher/expect can be the module lecturer, e-tutor, teaching assistant, external markers and/or moderators. All these put the student at the centre of the learning process within the ePortfolio environment, enabling a holistic assessment and learning experience (Sobko & Brown, 2019).

Teacher/expert assessment feedback on students' growth and development focuses on formative feedback. The essence of the 360-degree approach to ePortfolios is that assessment is designed to be continuous and all-round, allowing each student to receive formal and informal assessments on their work.

Students use digital rubrics and blogs (online journals) to provide themselves with self-reflection and feedback on their course and field experience assignments. They then receive further feedback on their assignments from their peers through collaborative technologies such as Google Docs (2023). Finally, faculty members and in some cases external experts such as mentor or cooperating teachers are reviewing the students' ePortfolios and using video technologies to observe student performance, diagnose student misconceptions, and provide additional formative assessment feedback.

Figure 2

A 360-degree Approach to Assessment
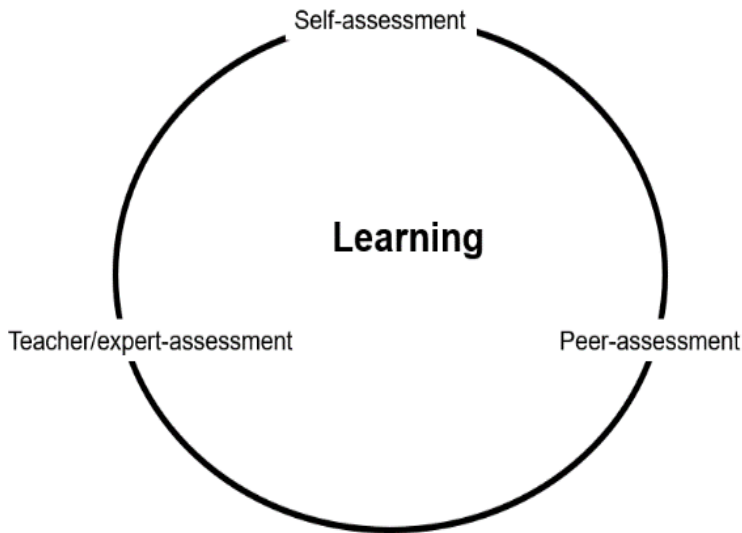
Note. Figure created by the authors.

An international call for a greater focus on assessment *for* learning, rather than on assessment for *just* measurement and accountability of student performance is well documented in the educational research literature (Yeh, 2009). The use of digital technologies to support an increased focus on formative assessment practices may lead to Hattie's (2009) vision of a visible teaching and learning framework where "teachers SEE learning through the eyes of their students and students SEE themselves as their own teachers" (p. 238). A 360-degree approach to ePortfolio assessment emphasizes the importance of students learning to integrate self, peer, and teacher/expert assessment for their growth and development as teacher candidates. This approach recognizes the knowledge teachers and students bring to learning interactions, and it acknowledges how new knowledge and understandings can grow from shared learning experiences. The three types of assessments within the 360-degree ePortfolio space interact similarly to the community of inquiry framework (Garrison, 2017) to create a meaningful educational experience for all learners.

An ePortfolio assessment process also helps students develop their professional teaching identities, which may include physical, emotional, intellectual, and even spiritual domains (Torres & McKinley, 2023). Blair (2017) suggests that ePortfolios communicate not just a body of work but also a teacher candidate's evolving identity. When a teacher candidate assembles textual artifacts that tell a story of their learning through an ePortfolio, they are also assembling an identity, a particular way of being recognized in a certain social context (Gee, 2014; Kalmbach, 2017; Yancey, 2014). The current promise of ePortfolios, according to scholars like Rhodes et al. (2014), may be their capacity to help students transfer their learning by (re)negotiating identities assembled in the moment. An example of

how the ePortfolio process helped a teacher candidate learn about her Canadian Metis identity can be accessed by this weblink: https://sites.google.com/mtroyal.ca/jaidenhourie/

As Hattie (2009) argues, visible teaching and learning happen when teachers see learning through the eyes of their students and when students see themselves as their teachers. ePortfolios further help create a collaborative online learning environment where teachers not only build a community (Garrison, 2017) and are self-determined (Hauge, 2021) but can also become co-teachers, thus co-creators of knowledge, in a connected world.

Conclusion

This study has revealed how students in our teacher education programs use ePortfolios to receive assessment feedback from multiple sources. ePortfolios are versatile tools that can be used in various contexts. A 360-degree approach to assessment in ePortfolios bringing a balance within the teacher education environment. Like a three-legged pot, in this approach, each leg represents an essential building block of authentic assessment in ePortfolios. As with the community of inquiry (Garrison, 2017), the goal is to afford learners and teachers a meaningful educational experience and an important lifelong learning opportunity. Within the digital era in which education operates, tools such as ePortfolios depend highly on various smart technologies. A further study on what kind of embedded digital technologies (i.e., video, audio, images) are used by learners and teachers in ePortfolios and how these impact the use of ePortfolios in teaching and learning may bring interesting findings to light.

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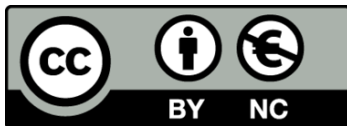Thistlethwaite, J. (2006). More thoughts on "assessment drives learning." *Medical Education, 40*(11), 1149–1150.

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