

Revisiting Reflection in E-Portfolios: A Chapelle's Technological Perspective

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Abstract

E-Portfolios are digital dossiers that document students' efforts, learning, and achievements over time. They characterise iterative processes of creation, compilation, curation, and reflection. Of these attributes, reflection is a core activity which promotes students' learning of writing and metacognitive awareness. In this paper, I argue for augmenting the instructional potential of reflection within a virtual environment (i.e., e-Portfolios) by showcasing how various modes of digital reflection empower students' metacognitive composing and thinking skills from a Chapelle's technological perspective. I set the scene by describing the background of research before thematically reviewing the e-Portfolio scholarship with a focus on reflection. Afterwards, I critically appraise three digital reflection approaches: reflection as soliloquy, dialogue, and multilogue. Based upon the review, I discuss pedagogical and research implications concerning how to warrant the successful implementation of digital reflection in classroom-based e-Portfolio programmes and some practical strategies.

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¹Introduction

Entering the twenty-first century, language education, be it in the first or second language context, has been developing exponentially because of the ever-evolving knowledge-based economy and the rise of a global audit culture, such as comparing student learning outcomes via school league tables and world rankings in education excellence. To

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accommodate this rapid economic and societal change, educators, researchers, and policymakers have proposed a paradigm shift from a teacher-centric instructional approach to a student-centric one, putting students rather than the teacher at the centre of the learning and assessment processes. Thus, students are taught to acquire higher-order thinking and study skills, namely analytical, evaluative, and creative skills, which can equip them to be future-ready. Likewise, teachers are expected to incorporate these twenty-first century study skills in their instruction to help students achieve various international competency skills or benchmarks required in those international testing programmes, such as Cambridge University Press and Assessment, the Programme for International Student Assessment (PISA), and/or Progress in International Reading Literacy Study (PIRLS).

To foster students' higher-order thinking skills, the Ministry of Education in various jurisdictions, such as the United Kingdom, Australia, New Zealand, China, Hong Kong and the ASEAN countries, has been promoting e-learning and e-assessment since the 2000s. The rationale behind these reform initiatives is threefold. First, this is a worldwide trend to include interactive learning apps in instruction, e.g. student response systems. Second, technology has become part of our everyday lives. For instance, there have been extensive applications of electronic gadgets, i.e. mobiles, tablets, laptops, virtual reality headsets, etc. in language classrooms. Third, remote instruction is likely to promulgate higher-order thinking skills, including self-evaluative skills and creativity through students' active participation in multimodal learning assignments through Web 2.0 tools. Among diverse forms of e-learning and e-assessment, e-Portfolios could be said to be most prominent as they could synergise language teaching, learning, and assessment and promote students' metacognition (Chapelle, 2009). Also, e-Portfolios have been widely utilised in language classroom settings but lack adequate research evidence to validate their usefulness for student reflection (Lam, 2023).

E-Portfolios broadly refer to digital containers which document students' learning, performance, and accomplishments over time. They entail the recurring processes of creation, compilation, curation, and metacognitive review of multimodal artefacts to maximise students' learning. Of these four signature e-Portfolio processes, reflection (aka metacognitive review) is deemed to be highly relevant to the uptake of metacognitive thinking and composing skills, because reflection captivates the very spirit of e-Portfolio pedagogy and assessment that fosters second language acquisition (Chapelle, 2007). In general education, reflection is an internal thought or an espoused belief that facilitates a learner's growth and development in a particular professional discipline (Waland & Shaw, 2022). In writing studies, reflection refers to a blend of metacognitive thinking and composing skills, which encourage a writer to ponder back (retrospection) and forth (projection) dialogically in the composing acts (Yancey, 1998). Although certain scholars claimed that reflection was merely a secondary text, it is now legitimised as an emerging, standalone genre and a specialised curriculum by other e-Portfolio advocates (Yancey,

2016). Reflective texts are no longer subordinate to regular portfolio artefacts but regarded as valid testimonies to support multiple arguments as presented in those collated artefacts.

In addition, Yancey (2016) has categorised reflection into three generations, including (1) the first generation – reflection situated in process movement and metacognition (e.g., capacity to reflect parallel to capacity to revise); (2) the second generation – reflection as part of classroom and assessment practices (e.g., making reflection external and available to students as a learning-orientated tool); and (3) the third generation – reflection as a sociocultural construct that promotes transfer of knowledge and practice (e.g., reflection as part of interdisciplinary and experiential learning). In the first generation (1970s-80s), reflection was perceived as part of the process movement and derived from the theory of metacognition – thinking about how to think (Flavell, 1979). The second generation (1990s-2000s) entails reflection as an instructional approach, where explicit teaching and assessment of reflection are likely to improve students' writing performance. It has dovetailed with the assessment *for* learning movement by the then UK-based Assessment Reform Group, where classroom-based assessment highlighting self-assessment was prioritised (Black & Wiliam, 2018). In the third generation (2000s-present), reflection develops as a unique genre, a curriculum, and a sub-field in writing studies that promotes the transfer of metacognitive knowledge and practice. As Yancey (2016, p. 303) argued, reflection has gradually become “an epistemological practice”, yet it needs more substantial evidence to validate its wider application in the print and electronic portfolio contexts.

Since reflection plays a pivotal role in the student's e-Portfolio development process, I review how teachers stepped up the pedagogical potential of classroom-based e-Portfolios, and in what ways various modes of digital reflection could empower students' reflective thinking and composing skills. The central argument of the paper is that e-Portfolios, featuring digital reflection, are more prone to support students' learning of writing contemplatively as well as increase their metacognitive awareness and thinking, although utilising e-Portfolios for reflection may bring about novel but unsurprising challenges (Yancey, 2019). To guide this literature review study, I enquire about the extent to which e-Portfolios could facilitate or impede the three approaches to digital reflection. After this introductory section, I review state-of-the-art e-Portfolio scholarship with a focus on reflection and evaluate three versions of digital reflection within diverse e-Portfolio environments. Subsequently, I discuss pedagogical and research implications for promulgating student digital reflection through e-Portfolio applications.

Review of E-Portfolio Scholarship with a Focus on Reflection

This section reviews e-Portfolio research according to the functions of reflection, namely reflection as a self-assessment strategy, reflection as a formative assessment practice, and reflection as a measure in high-stakes testing.

Reflection as a Self-Assessment Strategy

In e-Portfolios, self-assessment is a core learning activity, which is regarded as reflection-in-action within each composing event. When compiling and curating multimodal artefacts, students self-evaluate their current levels of competencies against the course/programme expectations as well as their self-set goals in order to close the learning gaps (Klenowski, 2010). In e-Portfolio and self-assessment scholarship, there has been no shortage of research that reports the positive impacts of student self-assessment on language learning (Aygün & Aydin, 2016; Belgrad, 2013). But other scholars identified that most self-assessment studies focused on the accuracy of self-grading (students predicting a grade near the end of a task, not self-assessment featuring metacognitive processes) and the correlation between self-grading and teacher-grading of assessment tasks (Andrade, 2018). Oftentimes, self-assessment is conducted as a lone exercise with minimal or no peer and teacher input, not to mention scaffolded instruction on specific self-assessment strategies (Panadero et al., 2016). Drawing upon literature on self-regulated learning, which is closely linked with self-assessment and reflection, researchers have found that through proactive use of self-feedback together with other feedback sources, students are more likely to perform self-assessment effectively (Brown & Harris, 2013). Hence, self-assessment is beneficial to learner reflection in e-Portfolio environments when students generate internal feedback under the aegis of more capable peers' and teachers' support (Panadero et al., 2019).

In addition, self-assessment procedures dovetail with iterative processes of self-regulated learning, such as goal-setting, progress monitoring, and revision plus adjustment (Zimmerman & Moylan, 2009). Yet, researchers noticed that students tended to look back on their language learning rather than to look forward to future enhancement, and most self-assessment tasks allowed no opportunities for students to make revisions once the tasks were completed (Andrade & Brookhart, 2016). Some theorists commented that self-assessment was seldom performed independently, especially among young learners, ESL students, or those with special educational needs, and some self-assessment tasks were neither pedagogical nor cognitively stimulating, which resulted in perfunctory reflection (Franco et al., 2017; Lam, 2014). Assessment experts have suggested that when introducing self-assessment as an instructional strategy in e-Portfolios, teachers may consider: (1) constant practice, (2) gradual implementation (from easy to challenging); (3) differential interventions (catering for diversity); and (4) emphasis on skill development (Panadero et al., 2019). Notwithstanding the merits of self-assessment and self-regulated learning, scholars have noticed that in some first and second-language classrooms, there is a clear lack of a

reflection culture, which discourages learners from being agentic and strategic when applying self-assessment skills to learning (Belgrad, 2013; Lam, 2022). To rectify this, teachers and researchers should form a critical mass and nurture a community of practice when attempting the e-Portfolio approach underscoring reflection.

Reflection as a Formative Assessment Practice in Portfolio Works

Since reflection is a key component in e-Portfolios, it is closely associated with classroom-based formative assessment practices, which encourage the activation of learners as owners of their learning (i.e. self-regulation) and peers as instructional resources to support one another (i.e. co-regulation; Wiliam & Thompson, 2007). Within an e-Portfolio, reflection is no longer idiosyncratic because of its communal nature. Scholars have stated that digital reflection is socially-mediated, given that it is highly accessible to the general public (Yancey, 2019). Hence, digital reflection has transformed itself from a personal form of regulation to a collective form of regulation, especially among peers, as exemplified in peer assessment and with other multimedia learning resources. In English-as-a-foreign-language classroom settings, researchers showed that the use of e-Portfolios, for instance, weblogs could enhance students' writing and peer feedback skills, such as error detection and correction, although these findings only applied to average- and high-ability students (Nicolaidou, 2013). Likewise, Nicolaidou (2010) found that e-Portfolios could promote improvement in text revision and accurate self-evaluation in process writing. In higher education, experts have proved that systematic use of formative peer assessment tasks facilitated deep reflection that pitched at the analytical rather than the descriptive level of changes in competence development. Furthermore, the overall quality of students' e-Portfolios has been upgraded (Nicol et al., 2019).

Nonetheless, in other e-Portfolio studies, student informants expressed scepticism about the usefulness of peer feedback, especially some lacking constructive criticism (Bader et al., 2019). Although reflection in e-Portfolios could assist students in improving their writing, some remained unable to reflect deeply. They merely counted on recalling rather than evaluating their learning experience without creating new knowledge in text revision (Cheng & Chau, 2009; De Bruin et al., 2012). In two paper-based portfolio studies, some students were unmotivated to engage in reflection and revision because they preferred adopting a surface approach to learning and did not experience the instructional advantages of portfolio assessment (Baeten et al., 2008; Lam, 2013). Baas et al. (2020) have claimed that the portfolio approach may not necessarily motivate students to self-regulate and self-reflect on their learning. The results of their study showed that the participants in the experimental group and at senior grade levels found some classroom-based formative assessment practices motivating for their learning, such as peer assessment, teacher-scaffolded instruction, and timely feedback, *not* the portfolio tool itself. Undoubtedly, using e-Portfolios to promote reflection as a formative assessment practice involves more than self-regulation of learning, namely, co-regulation of learning. While peer and teacher assessments can help students engage in deep

reflection, training students how to create revisable feedback for learning and act upon peer comments by mobilising online resources appears to be significant (Lam, 2021).

Reflection as a Measure in High-Stakes Testing

Pedagogically, reflection is used as a formative assessment component in e-Portfolios. In various contexts, e-Portfolios, featuring reflection, are summatively graded when they are part of large-scale standardised testing, such as the General Certificate of Secondary Education Exam in the United Kingdom and the European Language Portfolio across Europe. There have been contentious debates about whether it is ethical to grade students' or test-takers' reflective pieces in their e-Portfolios, given that these specific artefacts probably involve personalised, sensitive, or confidential content, not to mention the complexity of scoring this unique genre (Yancey, 2009). Assessment scholars have long argued that course instructors and programme directors should not use reflection as a summative measure in either classroom-based or large-scale standardised assessments, since students would not compose honest reflections to expose their incompetence in learning or disinterest in portfolio development (McGarr & O'Gallchóir, 2020). Even with tried-and-tested rubrics, teachers and raters may not grade students' reflective journals accurately, because one's reflection is highly subjective and individualised (Yancey, 2015). Some students may not master relevant rhetoric and discourse to express their learning trajectories reflectively, particularly in a narrative format with a critical stance (Yancey, 2016). Thus, e-Portfolios tend to defy summative evaluation when reflection is utilised to foster students' metacognitive thinking and composing skills.

In large-scale portfolio-based studies, students lamented that they composed reflective pieces to fulfil external accountability standards (stipulated by the state) rather than to review their learning profiles for actual writing improvement (Scott, 2005; Torrance, 2012). A minority of students and their parents expressed concerns that since their reflection was published publicly via e-Portfolios or online systems, they were anxious about the infringement of privacy and disclosure of their academic results to outsiders (Wilson et al., 2018). Kotsopoulos et al. (2015) have identified that teachers and young learners (i.e., grades 1-3 pupils) found it challenging to manipulate the interfaces of some e-Portfolio tools in the high-stakes assessment setting. The authors further noticed that most of these e-Portfolio tools under examination provided students with no opportunities for reflection, be it formative or summative. In writing studies, theorists have advised not to grade students' cover letters or reflective journals, because the summative evaluation of this complementary genre would exacerbate the test usefulness of e-Portfolio assessment, namely the lowering of content validity and scoring reliability (Lam, 2024). Instead, they suggested using students' reflections as a source of learning evidence to validate other e-Portfolio tasks, such as revised interim drafts, quizzes, worksheets, or reports. Such formative use of reflective pieces will enhance students' e-Portfolio development literacy, as students can learn how to safeguard originality,

authorship, and active compilation of their e-Portfolio works (White, 2005; Yancey, 2019).

Critical Evaluation of Digital Reflection in E-Portfolios

Since reflection plays an indispensable role in e-Portfolio assessment, this section re-examines three major approaches to adopting digital reflection in e-Portfolios, including reflection as soliloquy, reflection as dialogue, and reflection as multilogue.

Reflection as Soliloquy: A Confession?

Reflection as soliloquy refers to one of the oft-cited reflection approaches, in which students engage in internal monologues when reflecting in print or electronic portfolios (Yancey, 1998). This type of monologic reflection is likened to confessions in a religious sense. Conventionally, students are asked to engage in self-assessment and reflection tasks alone with little instructional input and prior training. This form of self-assessment tends to be ad hoc and haphazard. Teachers have no middle-term or long-term plans to incorporate reflection into the current English curriculum as a core component (Lam, 2023). In certain e-Portfolio programmes, reflection is a de facto element, in which it exists by name and may not be fully implemented to fulfil its learning-orientated function. Hence, students only regard reflection as a confession without considering any pedagogical purpose, namely, altering goals or making new plans to improve drafts based on multimodal feedback (Zhang, 2023). Although students are asked to identify their strengths and weaknesses to improve their writing, they seldom get a chance to review those revised drafts metacognitively owing to a tight study schedule or a lack of motivation (Lam, 2013). These students merely utilise e-Portfolios as a site for storing artefacts temporarily and reviewing learning of writing in a piecemeal manner rather than transferring their knowledge of writing to other courses, curricula or learning experiences (Yancey, 2016).

The reflection as a soliloquy approach is likely to create issues when carried out in e-Portfolio tools. First, students' reflection is restricted to students themselves, and it cannot be made visible to peers' or teachers' comments. Second, performing reflection *alone* could be emotionally-charged, cognitively challenging, and perhaps extremely subjective, so that the products of self-reflection become less trustworthy, less insightful, as well as less useful for learning improvement. Third, in most exam-driven second-language classroom contexts, students lack time (limited contact hours), space (rigid curricula), and ability (lack of reflective thinking and composing skills) to reflect on their writing development satisfactorily and sustainably. In fact, in these high-stakes testing regimes, students tend to adopt a pragmatic approach to learning and feel reluctant to construct their e-Portfolios, because portfolio-keeping becomes a burden, not an advantage (Aydin, 2014). Fourth, students feel tempted to fabricate their narratives in reflective pieces for fear of disclosing incompetence in learning writing or obtaining low marks in the summative portfolio assessment (McGarr & O'Gallchóir, 2020). Besides,

since reflection as soliloquy emphasises the self as a centre of learning, teachers have to ensure that they provide learners with adequate input (reflective language), guidance (scaffolded instruction), and learning opportunities (space to think, create and evolve) in different e-Portfolio platforms (Clark, 2016). Regardless of these issues, reflection as soliloquy remains the most popular self-reflection approach widely adopted in many e-Portfolio programmes owing to its easy start-up, flexible formats, and minimal training.

Reflection as Dialogue: A Self-Dialogue or a Peer Interaction?

Reflection as dialogue is defined as interactive dialogues that occur both internally and externally. Internally, when students are reflecting, they anticipate (projection) and review (retrospection) their language development concurrently (Yancey, 2016). This kind of internal dialogue oscillates back and forth when students are self-assessing their work against success criteria and previously completed artefacts. These internal dialogues result in revisions and remediation. Externally, students involve peers, caregivers, teachers, and outsiders (i.e. netizens) as sources of feedback to support the reflective processes. Of these stakeholders, peers are supposed to be the most significant in shaping the extent to which students engage in various levels of reflection, namely from descriptive to analytical (Yancey, 2019). This reflection approach usually takes place together with self-assessment, denoting that self- and peer assessment become core components in those e-Portfolio programmes (Allal, 2020; Barrot, 2021). Also, self- and peer assessment activities in e-Portfolios play facilitative roles in promoting reflection as dialogue. For instance, students are likely to compare and contrast self and peer feedback when engaging in text revisions. Such internal (reflective thoughts via think-aloud) and external (peer interactions via online chats) dialogues could develop students' metacognitive awareness and critical stances when they make decisions on what should be added, deleted, rewritten, elaborated on, or clarified in their interim drafts (Silver, 2016).

Digital reflection best represents the reflection as a dialogue approach via its multimodality. Students are given a range of options to perform reflection online or offline, namely audio (podcasts), video (screencasts), textual (forums), and graphic (animations). Thus far, scholars have corroborated that students performed dialogic reflection by giving and receiving peer feedback on social media sites or customised e-Portfolio tools successfully (Saeed & Al Qunayeer, 2020; Silver, 2016). Such a dynamic use of Web 2.0 applications fosters the acquisition of metacognitive knowledge (discourse of reflection) and co-construction of new meanings (textual improvement in rhetoric) when rewriting (Walland & Shaw, 2022). Performing reflection on e-Portfolio tools could transform self-dialogues into peer interactions impeccably. Despite these advantages, researchers found that students' low levels of computer literacy were a cause for concern if digital reflection was incorporated into e-Portfolios, given that not every student was confident in manipulating software tools when communicating with their peers online (Beach, 2012). The other challenge regarding the reflection as a dialogue

approach is the digital divide, in which some less privileged students may neither afford to pay the subscription fees of e-Portfolio tools nor to purchase electronic gadgets, such as tablets or mobiles, for e-Portfolio compilation (Hockly & Dudeney, 2018). The issue of confidentiality may deter some students from participating in this reflection approach unless their comments are made anonymous because they are afraid of provoking grievances or hatred from their classmates if they are found to be too candid and critical (De Brún et al., 2022). After all, cyberbullying remains a threat to those who are willing to express their thoughts or provide authentic feedback.

Reflection as Multilogue: A Joint Venture?

Reflection as multilogue refers to a community of practice when students engage in reflective thinking and composing collaboratively. Simply put, this reflection approach is community-based, drawing upon the benefits of diverse input given by students' peers, teachers, parents, caregivers, netizens, and other e-Portfolio end users. In this approach, e-Portfolios provide a critical site for students to synthesise past and present language learning; connect other courses plus extra-curricular learning with their current programmes; and combine personal and professional goals with their interests (Clark, 2016). Albeit communal, the reflection as a multilogue approach puts students at the forefront, emphasising their agentic engagement in the reflective process, in which they take up a lead role in orchestrating how to integrate monologues, dialogues, and multilogues alongside the interplay between group dynamics and cultural values to create a new e-Portfolio genre – collaborative digital reflection (Yancey, 2004, 2019). Through adopting common tools such as Google Sites, Wix, or Facebook, students can perform multimodal and multipartite digital reflection synchronously. Thus, students' reflection becomes a remix of different stakeholders' perspectives and experiences located in many different social media (Yancey, 2016). When students practice reflection as multilogue in e-Portfolios, the act of reflection is no longer private and idiosyncratic. In a new online environment, reflection becomes a joint venture among general internet end users, social media participants, and other e-Portfolio consumers apart from students' own teachers and classmates.

Reflection as multilogue could promote co-regulation of learning as students review, monitor and revise works-in-progress together with teachers, peers, and caregivers (Allal, 2020). Yet, scholars have queried the validity and reliability of digital reflective pieces owing to their hybrid authorship. In most e-Portfolio software, those reflective pieces lose their primary function of showcasing students' language learning trajectories, including efforts, achievements, and challenges (Belgrad, 2013). Students' identities have also changed from sole writers to co-authors working cooperatively with others online to share their worldviews, expertise, and strategies in language learning. Because of this, the idea of digital reflection may need an alternative or even a brand-new definition in e-Portfolio research (Lam, 2024). On another note, the explicit instruction in communication skills to facilitate reflection as multilogue is indispensable, given that

working on a reflective piece as a group is not as straightforward as one could imagine. After all, students need digital communication and composing skills to create their reflective pieces collaboratively (Clark, 2016). Since the reflection as a multilogue approach has become public, communal and collaborative, teachers may consider constructing a new set of scoring rubrics, which evaluate students' metacognitive thinking and composing skills more impartially, namely use of joint composing strategies, methods of curating artefacts unanimously, or capacity to evaluate one another's strengths and weaknesses in digital multimodal composing (Yancey, 2009, 2015). Rater training in scoring digital reflection rigorously is also needed to enhance teacher writing assessment literacy.

Pedagogical and Research Implications

From the above review, we are aware that reflection is crucial in e-Portfolio pedagogy and part of high-stakes assessment. Besides being one of the twenty-first century study skills in higher education, reflection promotes metacognition, learning-how-to-learn capacity, and critical thinking skills. In writing studies, reflection serves as a catalyst for text revision (Hammad Al-Rashidi, 2023). Situated within the context of e-Portfolios, reflection becomes an indispensable attribute because it undergirds metacognitive thinking and composing skills that facilitate the act of revision in first and second-language writing (Barrett, 2007). Transitioning from paper-based to digital format, portfolios have undergone a paradigm shift, that is, from monomodality to multimodality, from sole authorship to joint authorship, and from low to high accessibility (Lam, 2023). This paradigm shift equally applies to reflection when it moves from print to digital mode, say from monologue, dialogue, to multilogue. Through digital reflection, students utilise e-Portfolios to connect past experiences, present happenings, and (imagined) future events simultaneously to navigate strategic language learning (Nguyen et al., 2023).

Pedagogically, digital reflection is a novel genre, requiring a standalone curriculum to enhance its smooth implementation. Oftentimes, reflection is considered an ad hoc and add-on component of e-Portfolio programmes. Without fully integrating into a designated e-Portfolio curriculum, digital reflection is less likely to achieve its formative purpose, i.e. helping students to develop a learned self and become metacognitive in the composing process. The constructive alignment of teaching and assessing digital reflection in e-Portfolios appears to be a way out since self-assessment and reflection are an integral part of learning writing (Dann, 2014, 2018). Ultimately, e-Portfolios provide a virtual site for students to foster growth, transformation, and knowledge transfer by way of dynamic digital reflection (e.g. Google Docs, Wix, Instagram, or Schoology; Clark, 2016). Because of this, teachers require specific assessment training in setting up, managing, and evaluating the functionalities of digital reflection when it is operated on these e-Portfolio tools (Lam, 2021). Similarly, students need training in understanding the nature of digital reflection (e.g. multimodality on top of reflectivity), acquiring metacognitive discourse

and vocabulary, as well as having more hands-on experiences in manipulating the interfaces of multiple e-Portfolio software tools (Kotsopoulos et al., 2015).

Empirically, although scholars have investigated the usefulness of e-Portfolios, not much has been done to understand teachers' and students' perceptions of how and why they perform digital reflection via e-Portfolios. More qualitative and longitudinal studies adopting a narrative approach could be conducted to develop an in-depth understanding of how students perceive, experience, and mobilise strategies in reflecting upon their learning of writing electronically (Lam, 2023). It appears that not much has been done to explore the impacts of three digital reflection approaches on students' learning affectively (i.e. emotion management) and academically (i.e. writing improvement; Yancey, 2016). Despite recent scholarship on reflection and e-Portfolios, university researchers and classroom practitioners can identify how various e-Portfolio tools enhance students' uptake of evaluative thinking and composing skills and their metacognitive awareness of academic writing (Hawe & Dixon, 2014). Thus far, there is an apparent lack of systematic reviews or research briefs reporting the pros and cons of different e-Portfolio software tools that support or inhibit the applications of digital reflection in the writing classroom. These proposed research agendas are urgently needed, given that instructors, researchers, and programme directors look for tried-and-tested evidence to inform classroom practices, theory building, and benchmarks for institutional quality assurance, respectively.

Conclusion

In closing, the affordances and constraints of using e-Portfolios for digital reflection were reported through a literature review and an evaluation of three approaches to digital reflection. In the above, e-Portfolios can empower teachers to implement the three digital reflection approaches in terms of technological (user-friendliness of some tools), procedural (curriculum integration of e-Portfolios), and epistemological aspects (theory-and-practice praxis via exploratory practice). Needless to say, the whole e-Portfolio ecology tends to accommodate reflection as dialogue and reflection as multilogue more than reflection as soliloquy, because of its communal, multimodal, interactive, and synchronised nature. The reflection as a soliloquy approach remains useful and predominant, but it fits in better with paper-based portfolios than with e-Portfolios. While portfolio-based digital reflection can foster students' metacognitive thinking and composing skills, we need to be mindful of the trustworthiness of reflective writing, the issue of privacy, and the summative scoring of highly sensitive content presented in those reflective pieces.

Within e-Portfolios, digital reflection is not a panacea and does not resolve all writing instruction issues. Nevertheless, its classroom application seems to be vital, given that digital reflection can assist students in connecting the past, present, and future happenings when they learn writing, such as attitudes, motivation, emotions, strategies,

and challenges. Such a connection is built by students' internal and external dialogues that take place alone, with peers, or with significant others, including teachers, friends, or netizens. In other words, reflection enables students to monitor the processes of projection and retrospection throughout the e-Portfolio compilation journey. Such metacognitive acts promote reviewing, monitoring, and revising goals set by students, which results in the development of self-regulated learning capacity. Lastly, the theoretical contribution of this paper lies in the fact that the uniqueness of portfolio-mediated digital reflection should (re)claim its status by possessing its own genre, curriculum, and research niche in the higher education community. The central argument of this review paper throws new light on Yancey's (2016) third generation of reflection as an emerging genre and curriculum and resonates with Chapelle's (2007) technological perspectives of using reflection to facilitate second language acquisition. Undoubtedly, digital reflection in e-Portfolios is likely to develop as one of the major twenty-first century study skills in the era of e-learning as well as a standalone knowledge base driven by classroom writing research (e.g. exploratory-practice-as-research; Hanks, 2019).

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