The Learning Portfolio in Higher Education: An Integrative Review

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Abstract: The learning portfolio is often lauded as a powerful pedagogical tool, and consequently, is rapidly becoming a central feature of contemporary education. This paper synthesizes and critically reviews the literature pertaining to its use in higher education contexts specifically. Three key themes are identified and discussed. First, although the theory underlying the use of learning portfolios is promising, robust empirical evidence supporting their effectiveness remains sparse. Second, the tool is rooted in a complex pedagogy, and its potential can only be realized if the processes underlying this pedagogy are properly understood by advocates and executed by users. Third, there is a recurring tension between the developmental (process) and evaluative (product) conceptualizations of the learning portfolio. On the basis of these findings, some recommendations for future research and practice in this area are identified.

Background and Parameters of this Review

The use of portfolios was traditionally associated with the fine arts, however, the practice subsequently came to be used in education. The earliest examples of this occurred in the field of pre-service teacher education (*e.g.* Shulman, 1992), but it has since spread to various other contexts. Initially, portfolios were physical compilations of artefacts, but advances in technology eventually facilitated the emergence of the electronic portfolio, or ePortfolio. ePortfolios have been referred to by a variety of terms (*e.g.* efolio, digital portfolio, web-based portfolio, online portfolio). These are relatively interchangeable, and simply distinguish whether or not content is stored on a web-based platform. Focusing on this detail is unnecessary, however, as the most important characteristic of any portfolio is its primary purpose.

An ePortfolio may showcase examples of achievements to support an employment application. Alternatively, it may be prepared for assessment purposes, with the creator receiving a grade for the work. These 'showcase' and 'assessment' portfolios usually only include polished artefacts, and the focus is firmly on the finished product. A third potential purpose of an ePortfolio is to support **learning**. When this is the case, the ePortfolio also includes drafts and 'unpolished' work, and the emphasis is predominantly on the processes involved in compiling the portfolio – such as choosing the artefacts for inclusion, communicating the relevance of these artefacts, and reflecting on one's development over time. Informed by both social constructivist (*e.g.* Glasersfeld, 1989) and metacognitive (*e.g.* Flavell, 1979) theories of learning, this type of ePortfolio practice is intended to foster

skills such as self-regulation and cognitive monitoring, and ultimately, to stimulate the development of a 'lifelong learning ethos' as a habit of mind.

ePortfolios are used across all levels of the education system – but the growth of this practice has been especially notable in higher education (Eynon & Gambino, 2017; Kunnari & Laurinkainen, 2017). In this context, they are used predominantly to enhance learning, however, as universities face growing demands to produce so-called "T-shaped graduates" (*i.e.* those equipped not only with disciplinary specialization, but also with generic, cross-curricular skills), the secondary "showcase" value of the tool is also keenly recognized. Indeed, it seems that, in higher education, ePortfolios are perceived primarily as a catalyst in the learning process, but also as an effective platform through which learners can demonstrate notoriously hard-to-measure skills such as critical thinking and creativity. This is evident in Kunnari and Laurinkainen's (2017, p.7) definition of ePortfolios as

> *"student-owned digital working and learning spaces for collecting, creating, sharing, collaborating, reflecting learning and competences… as well as storing assessment and evaluation"*

This paper provides an integrative review of the recent literature on the use of ePortfolios in higher education, with the overall aim of discerning whether or not they can be considered to be 'effective' in terms of their impact on learning outcomes. It is acknowledged that potentially relevant literature dates back to the early 1990s, however, as Klenowski, Askew and Carnell (2006) pointed out, much of this focused solely on the use of portfolios for assessment purposes. Furthermore, there has been a noticeable surge in the number of papers published on the topic in recent years (see Figure 1), reflecting factors such as the facilitating influence of interactive Web 2.0 technology in the development of various ePortfolio platforms, and the launch of the International Journal of ePortfolio in 2011. In light of this cumulative pattern, and to ensure that the most recent developments are taken into account, this paper focuses specifically on research conducted since 2010. To emphasize the fact that learning – as opposed to technology – should be the dominant consideration when discussing these tools, the term **learning portfolio** is preferred, and used frequently throughout.

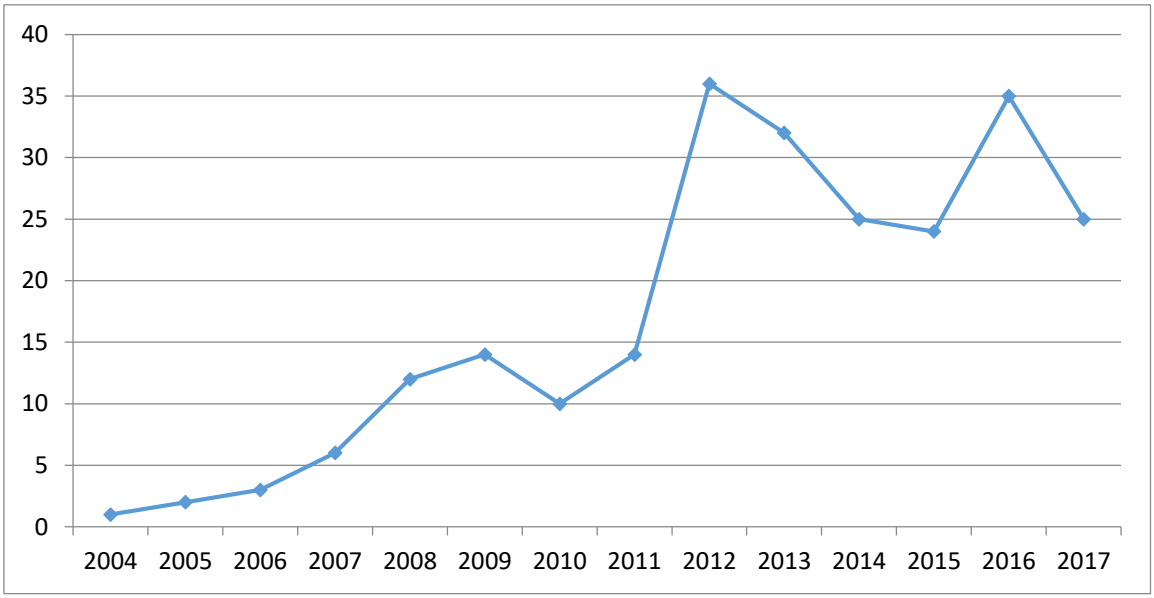

Figure 1. The number of journal articles and research reports per year, returned from an ERIC search using the terms 'learning portfolio*' OR 'eportfolio*' OR 'e-portfolio*' and the limiter 'Higher Education'

Key themes

(i) Support remains predominantly theoretical

Despite the high volume of literature on learning portfolios published in recent years, our knowledge of their effectiveness remains in its infancy. This was particularly well illustrated by a review conducted by Bryant and Chittum (2013). Employing a rigorous and systematic methodology, these authors identified 118 peer-reviewed journal articles pertaining to the use of learning portfolios across all levels of the education system. Of these 118 articles, 42% (n=50) were classified as 'descriptive' in nature, *i.e.* they simply made theoretical arguments for the use of ePortfolios, discussed secondary data, or described specific examples of learning portfolios in use. A further 9% of the articles (*n*=10) were classified as 'technological', *i.e.*, they described the features and usability of a certain platform (*e.g.* Mahara). The remaining 49% of articles (*n* = 58) were deemed 'empirical' in nature – that is, they presented original data from studies of learning portfolios in a specific context. Of particular note, however, is that the majority of these empirical articles were further classified as 'affective', *i.e.* they presented data pertaining to participants' experiences with and perceptions of using the portfolios, rather than those pertaining to actual learning outcomes. Although these types of studies offer certain insights, it must be recognized that stakeholders' attitudes towards portfolios are not necessarily indicative of their value as learning tools. Bryant and Chittum's full breakdown of the research on learning portfolios into various classifications is summarized in Figure 2.

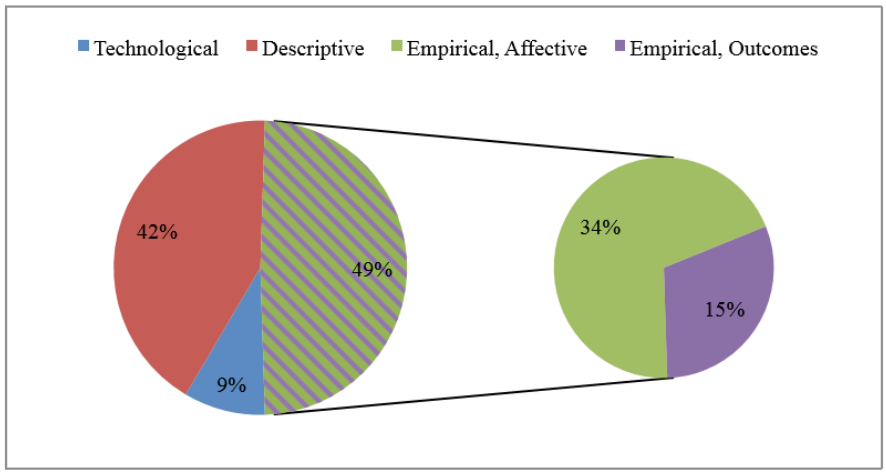

Figure 2. The percentage of ePortfolio research articles classified as technological, descriptive, empirical (affective) & empirical (outcomes), according to Bryant & Chittum's (2013) review

Given the increasing and widespread use of learning portfolios in higher education in recent years (Eynon & Gambino, 2017), the fact that such a comprehensive review just 18 published articles presenting data on learning outcomes is concerning. Bryant and Chittum's findings demonstrate that the discourse surrounding the effectiveness of learning portfolios – at least in 2013 – was heavily grounded in theory and opinion. In a special issue of the *International Journal of ePortfolio*, Rhodes, Chen, Watson and Garrison (2014, p.4) reiterated this concern, and put forward a formal call for researchers to *"move beyond case studies and anecdotal stories towards more rigorous methodologies and data across individuals as well as institutions and perhaps over time."*

In the intervening years, this call appears to have gone largely unheeded – with one or two exceptions. Eynon, Gambino and Torok (2014) made an explicit attempt to address the issue, presenting evidence from various portfolio initiatives across 24 U.S. campuses indicating that learning portfolio use has been associated with higher levels of student success, in terms of improved one-semester retention rates, higher cumulative grade point averages, and higher passing rates. Whilst these findings represent a move towards the accumulation of more robust empirical support, they are also subject to several limitations – something that the authors themselves acknowledged. For example, some of these portfolio/non-portfolio comparisons were made across entirely different courses, or from an earlier stage of study to a later stage of study, and in many cases, the learning portfolios were used "*in conjunction*

with other high-impact practices" (Eynon et al., p.96). Taking these factors into account, the observed differences cannot simply be attributed to the tool alone.

(ii) Successful outcomes depend on effective implementation

A further limitation of Eynon et al.'s (2014) data is that they do not facilitate the identification of potential mechanisms through which the learning portfolios may have enhanced learning. This type of information is especially important, given the open-ended nature of learning portfolio practice, and the disparate ways in which these initiatives can be implemented. Indeed, drawing on the findings of over 20 studies investigating ePortfolio use in various contexts in the U.K., Joyes Gray and Hartnell-Young (2010) concluded that the extent to which the tool yields 'successful outcomes' is heavily dependent on the nature of the implementation. In particular, they emphasized the importance of all stakeholders understanding the processes involved in portfolio construction - a message that has been, and continues to be frequently reinforced.

Jenson (2011) reported how the introduction of a learning portfolio system with first year students initially failed to meet its goals of fostering critical reflection skills and lifelong learning. These learners were encouraged to engage in regular reflection – a process that, as outlined above, is understood to be central in enhancing learning. However, an analysis of reflective statements over the first four years of the programme revealed that they typically consisted of a couple of sentences describing what had been covered in class – at best. Interestingly, when faculty members discussed this issue, several of them acknowledged that they had not explicitly outlined what a good reflective piece should entail, and consequently, had failed to scaffold the learners' engagement in the process. Furthermore, upon consulting the literature, they realized that the term 'reflection' is often used to refer to similar instances of mere 'description'. Authentic reflection, however, involves an in-depth analysis of the skills learnt from a particular exercise - and ultimately, it should facilitate *high-road transfer* – that is, the "deliberate effortful abstraction" (Perkins & Salomon, 1992, p.2) of these skills from the original context to other diverse contexts. With this in mind, these instructors began implementing a new set of strategies such as posing explicit questions to learners such as "why am I asking you to do this assignment?" and "how and why might you use this skill professionally/in society?" Crucially, analysis of reflections over the following four years revealed a considerable improvement in depth, with greater percentages of learners clearly identifying learning outcomes and relating these to other course and to life beyond university.

Jensons's (2011) findings demonstrate that simply requiring learners to use portfolios to reflect on their learning will not necessarily foster the desired outcome. Rather, instructors themselves must have a clear appreciation of what is meant by reflection – and this in turn needs to be fostered in learners, via explicit probing and scaffolding strategies. Moores and Parks (2010) reached a similar conclusion following a learning portfolio trial with three different cohorts of occupational therapy and physiotherapy students; as did Landis Scott and Khan (2015) following a review of 16 varied ePortfolio projects. Indeed, the latter noted that the extent to which learners struggle to understand the concept of reflection is often a surprise to their instructors. This lack of understanding is extremely problematic – not only does it preclude learners from deriving the intended benefits of the learning portfolio practice – there is also evidence to suggest that the experience can become increasingly frustrating and demoralizing over time. Struyven, Blick and DeRoeck (2014) interviewed a sample of pre-service secondary school teachers at various intervals throughout their engagement with a learning portfolio initiative in the context of a teaching internship. At the beginning of the internship, the learners were positively disposed towards the concept, agreeing that the portfolios would draw attention to their strengths and weaknesses, and facilitate the development of various teaching competences over time. However, by the end of the internship, they no longer endorsed this view, and saw the portfolios as being a mere "container for assignments" (Struyven et al., 2014, p.46). Many felt that the 'reflection' element was forced, or overdone, and perceived it to be a meaningless administrative activity rather than a learning process. Some also believed there was too much focus on the ability to write, such that those with good writing skills were likely to achieve the best grades for their portfolios, regardless of their actual level of mastery of the teaching competences.

In many studies, technology has been identified as a major hurdle in studies of learning portfolio use. Andrews and Cole (2015) noted that the complexity of the *Mahara* software, confounded by inadequate IT literacy and limited technical support, reduced the perceived value of the portfolios among both teachers and learners, and that this in turn yielded low levels of engagement and poor quality work. Similar findings emerged from a survey of

nursing and midwifery students conducted by Birks, Hartin, Woods, Emmanuel and Hitchins (2016), with many describing the *PebblePad* platform as "not user friendly". This message should be heeded to some extent, however, it is extremely important that technology does not become the scapegoat for failed initiatives that are in fact due to more conceptual shortcomings in the way learning portfolios have been understood and implemented. As Matthews-DeNatale, Belvins-Bohanan, Rothwell and Wehlburg (2017) pointed out, those implementing learning portfolio programmes for the first time often ask "what software should we use?" when, in reality, they should begin with deeper questions related to purpose and learning design. In the same vein, those attempting to unpack the reasons behind an unsuccessful implementation should focus less on superficial features such as technology, and more on pivotal features such as pedagogy.

To recap: disappointing outcomes of learning portfolio trials can usually be attributed to a poor understanding of the pedagogical processes underlying the tool's use. With this in mind, it might be expected that instances of more successful learning portfolio initiatives can be explained by a thorough understanding of, and thus meaningful engagement with these processes. As noted previously, studies including robust outcome measures have been rare, however, evidence from attitudinal data seems to point in this direction. Lewis (2017) surveyed a sample of B.Ed. students, each of whom had been using learning portfolios over a period of five semesters and in seven different courses. In addition, a document analysis of the course study guides was conducted, to obtain a measure of how the purpose and use of the learning portfolio was outlined in each case. Lewis' findings illustrated that enhanced learning was most evident in courses whereby the purpose of the learning portfolio was made explicit, and whereby the curriculum design and activities capitalized on the learning portfolio's capabilities for constructivist learning and social pedagogy. That is, when course designers and teachers evidenced a deep appreciation of the processes that a learning portfolio is intended to support, learners perceived a more authentic learning experience. Favourable reactions towards the learning portfolio were also reported by both Bollinger and Shepherd (2010) and Wakimoto and Lewis (2014). In the case of the former, 85% of students agreed that the practice increased their desire to learn, and many endorsed statements that explicitly mentioned key processes, such as *"assisted me in reflecting"* and *"helped me evaluate my own progress"*. Those interviewed in the latter - a group of trainee counselling and psychology students – indicated that the portfolio process had been useful for reflecting on their competencies, and gave them insight into the developmental nature of becoming professionals.

Of particular interest with respect to all of the above studies are some additional factors that again underscore the centrality of the processes underlying the portfolio, and the instructional and learning context in which they are embedded (as opposed to the tool itself) in achieving success. To begin with, both Bollinger and Shepherd's (2010) and Wakimoto and Lewis' (2014) studies investigated learning portfolio use in graduate programmes. It may be that graduate students have developed some fundamental skills in reflection and in making effective use of feedback during their initial course of study, and can therefore more readily engage with learning portfolios. Alternatively, these learners could have benefited from having more developed domain knowledge – a factor that has long been recognized by cognitive psychologists as playing an important role in supporting and scaffolding higher-order thinking processes (*e.g.* Bruer, 1993). The particular disciplines in question may also be a relevant factor. Wakimoto and Lewis' (2014) learners were training in helping professions, in which the skill of self-reflection is a central competency; similarly, teacher education is also embedded in a culture of reflection (Lewis & Gerbic, 2012). It may be that the use of learning portfolios aligns well with such disciplines, but not with others. More specifically, the extent of conceptual change needed prior to the introduction of learning portfolios is likely to be greater in certain disciplines.

(iii) Striving for standards may erode individuality

Kunnari and Laurinkainen (2017) clearly highlighted the importance of viewing learning portfolios in terms of the processes involved in their construction, describing them as "*learning spaces for collecting, creating, sharing, collaborating and reflecting*". Furthermore, the extant research (albeit limited) suggests that the success of the learning portfolio is heavily dependent on the extent to which these processes are understood and implemented. That said, there is an additional 'product' dimension to the learning portfolio that also plays an important role, but can be difficult to assimilate into this discourse about processes. Indeed, it appears as a somewhat awkward addendum to Kunnari and Larinkainen's definition (*"…as well as storing assessment and evaluation"*).

In almost all of the studies discussed in the previous section, the learning portfolios were formally assessed at the end of the semester and assigned a grade – this how the tool is typically used in higher education settings. Furthermore, in the domains of teaching and healthcare education especially, learning portfolios are often linked to external standards or professional registration requirements, and as such, double up as a long-term demonstrable record of competences, or record of ongoing professional development. As Moores and Parks (2010) pointed out, using portfolios in this way may increase learners' motivation and engagement with learning portfolio initiatives. Problematically, however, this is an *extrinsic* motivation to learn – and one of the ultimate goals of learning portfolio practice is to foster *intrinsic* motivation to learn. Chau and Cheng (2010, p.940) also noted how excessively prescriptive standards or assessment guidelines can lead to a 'clone' effect across various portfolios, with learners "*viewing conformity to evaluation criteria as a more pressing imperative than individuality".* Learners themselves are often fully aware of this tendency – as illustrated by a participant in Kabilan and Khan's (2012, p.1014) study, who admitted to *"repeating and paraphrasing what others have said."* This is particularly concerning, given that one of the major theorized benefits of learning portfolios is their ability to facilitate a self-directed, personally meaningful, and thus deeper form of learning. Ironically, this excessive 'sameness' across various portfolios may also reduce their perceived value to prospective employers. Whitworth, Deering, Hardy and Jones (2011), for example, reported that school administrators ranked a host of other factors as being more important than portfolios in the teacher hiring process, with many expressing doubts concerning their reliability and validity as an indicator of teaching ability, due to their prescribed and polished nature.

Unfortunately, there are no simple solutions to this tension between the developmental (process) and evaluative (product) aspects of learning portfolio use, although the importance of fostering a sense of *ownership* has been recognized to this end (*e.g.* Shepherd and Skrabut, 2011). Indeed, Thibodeaux, Cummings and Harpnuik (2017, p.8) identified management of one's own content, opportunity to assess one's own learning and other key indicators of *"choice and voice"* as being among the most important factors contributing to continued use of learning portfolios beyond university. The specifics of "*choice and voice*" however, can prove challenging. Joyes et al. (2010) suggested that learners should have control over what and how often they share aspects of their portfolio with their instructors, but it is unclear how exactly this practice would align with formal assessment. Others (e.g. Birks et al., 2016) have suggested allowing learners to use software of their choice when creating their portfolios – but this flexibility needs to be balanced by considering whether the functionality of certain software is rich enough to support deep learning and reflection. Perhaps the most effective example of preserving learner autonomy whilst simultaneously facilitating reliable assessment is the use of process-focused rubrics. Pennington (2011)'s *Rubric for Evaluating Portfolio Reflective Thinking*, for example, does not specify what types of artefacts a learning portfolio should contain or how they should be presented. Rather, it sets out distinct, but abstract criteria describing increasingly sophisticated levels of different types of reflection in which pre-service teachers may engage.

At this point it should be noted that there has been a growing interest in recent years in pairing 'digital badging' with learning portfolios. This practice has been portrayed as a way of helping learners to realize the truly integrative potential of the learning portfolio in terms of connecting learning across curricular and co-curricular contexts (Lloyd, 2015). However, it has also been viewed as a means of incentivizing students to maintain and update their portfolios (Grush, 2015) – which, as highlighted earlier, is problematic in terms of the distinction between intrinsic and extrinsic motivation. Ultimately, the integration of badging within a learning portfolio raises complex questions, and is likely to further exacerbate the product/process tension already inherent in the latter. As Buchem (2016) outlined, there are marked differences between the two tools with respect to concept such as autonomy and the relative focus on assessment. For instance, learning portfolios are *created* by learners, whilst digital badges are *issued* to learners. Some believe that these differences threaten the supposed compatibility of these tools, and risk *"shifting the focus from learning to badge-collecting"* (Buchem, 2016, p.349). On a more practical note, if learning portfolio technology is formally linked with *Open Badging* software (Grush, 2015), this also cuts across any decision to allow learners to use their own platforms to create their portfolios.

It is clear that the learning portfolio is conceptually located somewhere between process and product, with the former recognized as being crucial to the underlying pedagogy and development of the lifelong learning ethos, and the latter valued for its potential to provide formal evidence of the skills and competencies learned. In practice, however, it seems there is a certain dissonance between these two goals that has created significant challenges. In a particularly well-designed study, Cheng and Chau (2013) investigated the effects of explicitly balancing the two. They first distinguished between different types of goal orientation that learners may adopt when constructing their

portfolios: *mastery* goal orientation (whereby learners strive to learn, understand and develop competence in light of self-referential standards) and *performance* goal orientation (whereby learners strive to demonstrate high ability relative to their peers, on the basis of normative standards). Learners who simultaneously focused on both of these goals were said to exhibit *dual goal orientation*. Upon analysing the content of various learners' portfolios, Cheng and Chau (2013) concluded that those exhibiting dual goal orientations displayed a higher level of persistence and also a higher level of reflective competence than their peers. The study was considerably limited by a very small sample size (n = 26); furthermore, as the authors themselves pointed out, the validity of the measure of goal orientation might have been enhanced through triangulation, as opposed to relying solely on observations of portfolio content. Despite these shortcomings, this research nonetheless provides a helpful template for the dual conceptualization of learning portfolios that may be replicated and extended upon by others, and could eventually play an important role in informing the design and development of new curricula to better support future learning portfolio initiatives.

Summary & Recommendations

Despite the progressive growth of literature on learning portfolios in recent years, our knowledge of these tools remains rather limited. Although there is a strong theoretical foundation for their use, a consultation of the research reveals insufficient empirical support for their effectiveness, and a clear need for more sophisticated evaluations. On the basis of the available literature, it is evident that portfolio implementation can be fraught with difficulties, due to insufficient understanding of processes, and tensions between the developmental and evaluative aspects. Difficulties with technology have also been cited, but these are somewhat superficial, and typically mask deeper pedagogical deficiencies. It is clear that the successful and sustainable use of learning portfolios in higher education requires considerable planning and preparation, and a substantial commitment from all stakeholders. If this is not the case, the experience is likely to be as Joyes et al. (2010, p.493) described, *"like a game of snakes and ladders, where initial rapid progress can suffer major setbacks."* In terms of future-proofing the practice such that potential 'snakes' are avoided, the following recommendations are made:

(i) Future research should include empirical outcome data

There is a clear need for more methodologically robust studies of learning portfolio use that triangulate outcomes (as measured by achievement data and demonstrable competencies) with the self-reported attitudes and perceptions of key stakeholders. This may involve analyzing learners' reflective pieces but observational methods will also be required if the mastery of complex competencies is to be captured. Future studies should also make use of learning analytics generated by portfolio platforms to track use of the tool over an extended period of time.

(ii) A thorough, shared understanding of portfolio 'processes' should be established

It cannot be taken for granted that instructors – let alone learners – comprehend the key processes involved in the creation of learning portfolios. Portfolio use is based on a relatively novel and sophisticated pedagogy, and it continues to evolve in response to changing educational demands. Indeed, as Clark and Eynon (2009, p.19) pointed out, in the absence of an overarching professional organization, and a formal set of guidelines for best practice, the use of learning portfolios in higher education *"remains a movement, not yet a field."* Individual institutions thus have a responsibility to engage with the literature - and with each other – in order to develop a collective understanding of the theory underlying learning portfolios, and of specific portfolio practices such as reflection and self-regulated learning. This will enable relevant stakeholders to provide better informed and coherent support for teachers in developing same. Instructors, in turn, have a responsibility to avail of this support, to communicate the value of the tool and the nature of the processes to learners, and to develop curricula, learning activities and instructional methods that facilitate true engagement with these processes.

(iii) Learners should 'own' their portfolios

Learners should be granted autonomy in selecting the nature of the artefacts to be included in their portfolios, and – if feasible – the platform used to create them. A true sense of ownership may enhance intrinsic motivation and engagement with the portfolio process, leading to a more meaningful learning experience, and fostering the wider goal of nurturing self-directed lifelong learners. Possibilities of how this sense of ownership can be further enhanced are also worth exploring.

(iv) The tool should be named and conceptualized with its primary goal in mind

Given that the primary purpose of a portfolio is its most important characteristic, the nomenclature should reflect this. If the intention is to support lifelong learning, then *learning portfolio* (as opposed to *ePortfolio*) seems the most appropriate term. Furthermore, if universities are introducing learning portfolios with the aim of producing "T-shaped" rather than "I-shaped" graduates, then the emphasis needs be placed on developing the broad, cross-curricular skills that constitute the difference between these two concepts. That is, learners need to be scaffolded in developing skills such as critical thinking and metacognition through the creation of their portfolios. Such scaffolding can be facilitated by building strong constructive alignment between individual course learning outcomes, programme level goals and outcomes, and institution-wide generic graduate attributes (Oliver, 2013). If assessment is to take place, it should be evidence of these dispositions that is assessed; such that learning portfolios complement rather than replace traditional tools that contribute primarily to the development of deep, disciplinary knowledge. Ultimately, conceptualizing portfolios as learning tools, as process-driven, and as catalysts in the development of the horizontal bar of the "T", may help ease the well-documented tension between their developmental and evaluative components.

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