



## The use of ePortfolio in health profession education to demonstrate competency and enhance employability: A scoping review

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### Abstract

The use of an ePortfolio to support the education of health and social care professionals is increasing in higher education. ePortfolios support the educational journey of students; however, it is unclear how they are used to demonstrate competency or enhance employability. The aims of this study were to explore the literature to identify the use of ePortfolios in health and social care higher education curricula to demonstrate competency or improve employability. Three electronic databases were searched to identify papers using scoping review methodology. Studies that were published between 2001 and 2019 were included. A total of 1530 articles were initially identified after duplicates were removed. Nine studies were included in the final qualitative synthesis following a robust review. Data were synthesised into themes that describe the role of ePortfolios in demonstrating competencies in higher education or improving employability they were (1) Self-Directed Learning, (2) Deeper Learning, (3) Expanding Literacies, (4) Successful Implementation. These studies highlight that ePortfolio is both a product and a process. ePortfolios support students to gather artefacts that demonstrate professional competency which can be applied in the job-seeking process. The ePortfolio development process applies social constructionist approaches to learning which support lifelong learning and enhance employability. The findings also highlight the importance of providing students with clear expectations of the role of an ePortfolio in their professional learning journey.

### Keywords

ePortfolio;  
professional education;  
professional identity;  
employability;  
competency

### Introduction

An electronic portfolio (ePortfolio) is a digital vessel that can be used to store, organise and exhibit a variety of digital assets, including text, video, images and audio (Abrami & Barrett, 2005). Historically, the use of portfolios to enhance employability was mostly confined to the arts disciplines, however, since 2010 ePortfolios have been increasingly used in the health and social science tertiary education sector to aid learning and assessment and to support the demonstration and assessment of professional competency (Janssens et al., 2022a; Kirby et al., 2022). Consequently, ePortfolios now have a breadth of applications for both students and health and social science professionals; these

include but are not limited to supporting learning and assessment, developing, and demonstrating core competencies, career development, professional evaluation and collecting evidence for professional registration and to showcase strengths to future employers (Downer & Slade, 2019).

One of the reasons that ePortfolios have become increasingly popular in health and social care education is due to the adoption of competency-based education (Janssens et al., 2022b). Competency-based education is student-centred and guided by a social constructionist pedagogy supporting the development of professional competency and identity (Hall et al., 2012; Keengwe et al., 2014). EPortfolios can provide a safe place for students to build their own representations of knowledge and professional identity by providing a safe space to reflect on and engage in active learning experiences that lead them to uncover inconsistencies between formal and informal learning experiences (Hall et al., 2012; Keengwe et al., 2014). Informal learning includes the process of socialisation into the profession and the interprofessional team during practice-based learning (Hall et al., 2012).

An ePortfolio offers both a technological and pedagogical approach to support learning as it can be used to structure learning, provide a place for reflection, archive evidence of learning, as a repository for feedback and showcase achievements in preparation for the job-seeking process (Gerbic et al., 2009; Janssens et al., 2022b; Slade & Downer, 2020). The evidence students collect provides the opportunity to demonstrate the acquisition of specific skills and abilities. By extension, an ePortfolio may be used to evidence professional competency for a registering body, to address industry selection criteria for employment, or to showcase professional development in preparation for promotion or different employment opportunities (Carter, 2021).

The purpose of this review was to examine the use of an ePortfolio in health and social care higher education curriculum to demonstrate competency or enhance employability. We believe that our findings will inform educators about the formal and informal ways that can be used to demonstrate competency and enhance employability. Our scoping review methodology was guided by Arksey and O’Malley’s (2005) framework with modifications suggested by Levac et al. (2010) and Peterson et al. (2017).

## Methods

### Step 1 Identify the research question

Focusing on higher education settings for both health and social care education, we sought to understand if ePortfolio is being used to demonstrate the development of professional competency and/or to enhance students’ employability. The research question was developed by the review team through discussions, preliminary searches, and the development of a Population – Intervention – Outcome (PIO) framework. Part of the initial search included existing systematic reviews. These were identified by searching PROSPERO and Cochrane Library with ‘ePortfolio’ or ‘electronic portfolio’ as key search terms. Although review papers were not included, they informed the introduction to our project and this paper.

**Table 1. Population – Intervention – Outcome (PIO) Structured Search Strategy**

P	'health*care education'  'social*care education'  'health*care student*' OR 'social*care students'
I	ePortfolio*, e*portfolio*, electronic portfolio*
O	employ*  competen*

## Step 2: Identify relevant studies

Search terms were used first individually and then in combination. The PIO framework (Table 1) guided our search for relevant information and formulation of further search strings that best matched the capabilities of database search engines. The electronic databases CINAHL, Scopus and PubMed were used to search for pertinent articles between 2001-2023. These databases were selected as they target health and social sciences literature.

Criteria for inclusion:

- (1) Health professional competency OR employability AND
- (2) Health industry
- (3) Higher education OR training AND
- (4) ePortfolio/portfolio/electronic portfolio AND
- (5) Published between 2001 and 2023
- (6) Published in the English language

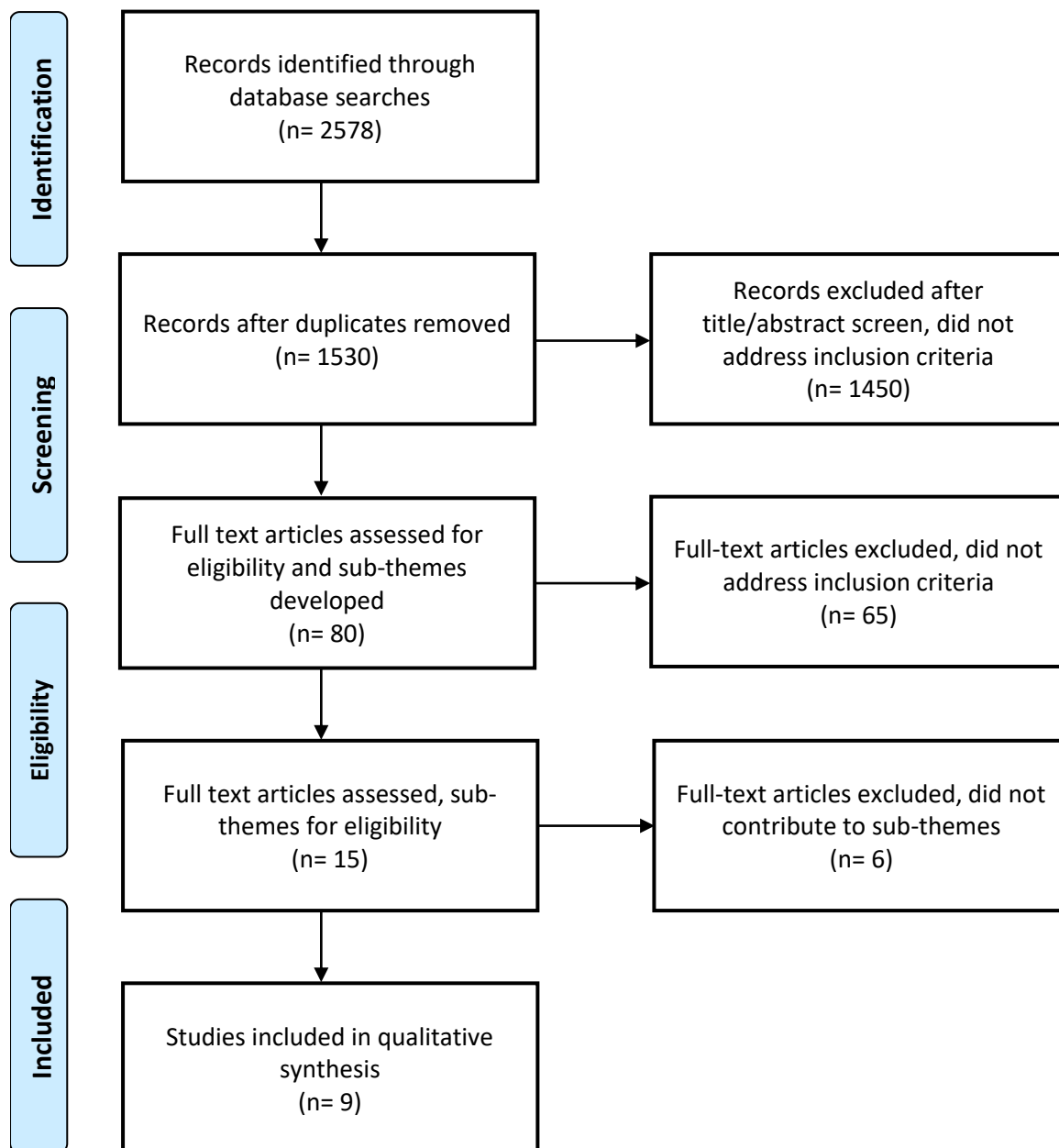
Criteria for exclusion:

- (1) Use of ePortfolio in industry other than higher education
- (2) Use of ePortfolio by students studying non-health or social care disciplines
- (3) Assessing competency using methods other than ePortfolio
- (4) Other types of portfolios (e.g., paper-based)
- (5) Isolated use of ePortfolio
- (6) e-assessment (not ePortfolio)
- (7) Book or book chapter
- (8) Students' perceptions of portfolio
- (9) Assessing competency not via portfolio
- (10) Technical development of ePortfolio
- (11) How to use ePortfolio
- (12) Review papers

## Step 3: Study selection

After the removal of duplicates (using Endnote library), an initial review of titles and abstracts was completed to determine full-text articles for review. To determine suitable texts to be included in the synthesis, full texts were then reviewed and selected according to their relevance to the review question.

One author (LC) read the papers to explore similarities and differences between the papers. A set of emergent themes were created through this process. This was confirmed by the remaining three authors (AH, TD, BF), who each read a set of articles to interrogate the applicability of each paper to the research question and elucidate the themes. During this stage, a further six papers were excluded through this in-depth analysis, it became evident that they were not applicable to the research question. A total of nine articles were included in the review.



**Figure 1. PRISMA Flow Diagram.**

#### **Step 4: Chart, collate, summarise and report results**

The data that were extracted from each of the studies included key characteristics (authors, year of publication, country, study aims, design and participant details), contextual information (information about the components of an ePortfolio and its purpose), key findings in relation to the previously determined themes and any new or emerging themes.

## Results

### Overview of studies and emerging themes

Table 2 provides an overview of the 9 studies which were included. Of these studies, four were completed in the US, (Gaba, 2015; Karsten, 2012; Laux & Stoten, 2016; Patrick-Williams & Bennett, 2010) three in the UK, (David et al., 2001; Rees et al., 2005; Tailor et al., 2014) and two in Australia (Hume & Hamilton, 2019; Sidebotham et al., 2018).

Three studies focused on nursing students, (Karsten, 2012; Patrick-Williams & Bennett, 2010) three focused on medical students, (David et al., 2001; Rees et al., 2005; Tailor et al., 2014) one study was with dietetics students, (Gaba, 2015) one was with midwifery students, (Sidebotham et al., 2018) and one focused on occupational therapy stakeholders (Hume & Hamilton, 2019).

Three studies used survey design (Gaba, 2015; Patrick-Williams & Bennett, 2010; Tailor et al., 2014) and one used survey within a Delphi study, (Hume & Hamilton, 2019) one used survey and focus groups, (Sidebotham et al., 2018) one used case study design (David et al., 2001) and one used focus groups while also looking at the reliability and construct validity of the assessment tool used to assess students' ePortfolios (Rees et al., 2005). The remaining two papers did not describe a research design but described the ePortfolio implementation process (Karsten, 2012; Laux & Stoten, 2016).

All nine studies described the purpose of their ePortfolio as contributing to enhancing employability and/or demonstrating competency. Five studies detailed the components of their ePortfolio (David et al., 2001; Hume & Hamilton, 2019; Karsten, 2012; Laux & Stoten, 2016; Sidebotham et al., 2018) while the remaining four studies provided none or minimal details of the components of the ePortfolio.

The four key themes were Self-Directed Learning, Deeper Learning, Expanding Literacies and Successful Implementation. These themes, and the related sub-themes are outlined in Table 3, and further explored below using examples from the nine papers included in the review.

**Table 2. Summary of the Included Studies**

Author(s) & Year	Country	Aims	Design	Participants	ePortfolio components	ePortfolio purpose
David, Davis, Harden, Howie, Ker, & Pippard (2009)	UK	ePortfolio for assessment	Case Study	Medicine	Knowledge, skills, attitudes for competent and ethical practice in disease management and prevention as a doctor	Demonstrate competency for progression in degree
Gaba (2015)	USA	Demonstration of competency over time	Survey	Dietetics	Not clear	Demonstration of competencies
Hume & Hamilton (2019)	Australia	Explore purpose, content and development phases of ePortfolio	Delphi study	Occupational Therapy	Development and maintenance of professional knowledge and skills	Competency for entry to practice
Karsten (2012)	USA	Benefit of ePortfolio to employers	Not stated	Nursing	Course work, personal goals, academic goals, reflection on academic and clinical skills	Demonstration of competencies and employability
Laux & Stoten (2016)	USA	How ePortfolio is implemented in a teaching program	Not stated	Nursing	Storage of multi-mode, multi-media assignments, to evidence professional competencies	Demonstrate competency for progression in degree and to display academic work for employment
Patrick-Williams & Bennett (2010)	USA	ePortfolio as part of the hiring process	Survey	Nursing	Illustrate the evolution of clinical practice (skills)	Demonstrate learning over time.
Rees, Shepherd, & Chamberlain (2011)	UK	Process of using ePortfolio as an assessment method	Focus groups	Medicine	Not stated	Reflection on personal and professional development
Sidebotham, Baird, Walters, Gamble (2018)	Australia	Demonstrating preparedness for professional practice	Survey and focus groups	Midwifery	Repository for demonstrating continuity of care experiences, reflection, learning goals, learning outcomes	Demonstration of competencies and employability through self-assessment

Hamilton, A. et al. (2023). The use of ePortfolio in health profession education to demonstrate competency and enhance employability: A scoping review. *Journal of Teaching and Learning for Graduate Employability*, 14(1), 169–181.

Taylor, Dubrey, Das, (2014)	UK	Use of ePortfolio in workplace-based assessments	Survey	Medicine	Not stated	Repository for course assessments and records of clinical competencies
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**Table 3. Chart of Findings by Themes and Sub-themes**

Author(s) & Year	Self-Directed Learning			Deeper Learning		Expanding Literacies	Successful Implementation
	Flexibility & convenience	Organisation skills	Independent learning	Reflection & critical thinking	Active learning		
David et al. (2009)		X	X	X	X		X
Gaba (2015)	X	X		X		X	X
Hume & Hamilton (2019)	X	X		X	X	X	X
Karsten (2012)	X			X	X	X	X
Laux & Stoten (2016)	X	X	X	X	X	X	X
Patrick-Williams & Bennett (2010)						X	
Rees et al. (2011)		X	X	X	X		X
Sidebotham et al. (2018)	X		X	X	X		X
Taylor et al. (2014)			X	X			X
<b>Total</b>	<b>5</b>	<b>5</b>	<b>5</b>	<b>8</b>	<b>6</b>	<b>5</b>	<b>8</b>

## **Key theme 1: Self-directed learning**

### ***Sub-theme 1.1: Flexibility and convenience***

The theme *Flexibility and Convenience* was explored in five papers and depicts that ePortfolios should be created in flexible and convenient sites that are accessible yet secure (Gaba, 2015; Hume & Hamilton, 2019). Flexibility includes providing ongoing access to the digital platform after graduation (Hume & Hamilton, 2019). Furthermore, ePortfolios provide a convenient and transparent digital repository for students to record their learning accomplishments and consolidate their learning (Sidebotham et al., 2018). ePortfolios are a repository where students can collect a compilation of their work (Karsten, 2012), to build a showcase by presenting how they have demonstrated professional competencies (Gaba, 2015; Hume & Hamilton, 2019). The ePortfolio can also be used to support students in the 'pursuit of their professional career pathways' (Laux & Stoten, 2016, p. 275) and to showcase subsequent development during their career (Hume & Hamilton, 2019).

### ***Sub-theme 1.2: Organisation skills***

Advancement of organisation skills using ePortfolio was identified in five papers. In the research conducted by Hume and Hamilton (2019), 100% of the Delphi study panellists agreed that an ePortfolio could support students to practice routine record keeping and improve organisational skills. Laux and Stoten (2016) explained that an ePortfolio provides an opportunity for students to learn how to organise and showcase their accomplishments.

David et al. (2001) proposed that when students compile evidence in their portfolios, they demonstrate organisational and time management skills. Examples included documentation of hours spent and projects completed and of observations and reflections (Gaba, 2015). The study by Rees et al., (2005) found that students reported that keeping a portfolio helped their organisational skills and 'encouraged them to focus on their academic progress holistically' (p. 8). Furthermore, ePortfolios provide students with 'opportunities [...] to maintain a professional web presence [...] as they go forward in their careers' (Gaba, 2015, p. 1154).

### ***Sub-theme 1.3: Independent learning***

Six papers addressed the theme independent learning. Independent learning can be contextualised within an adult learning framework where self-directed learning and reflective practice (Tailor et al., 2014) based on creative, flexible, learning experiences are integrated meaningfully into preparing for professional practice (Laux & Stoten, 2016). The concept of independent learning was evident through teaching strategies where students are encouraged to 'take responsibility for their own learning and personalise their learning experiences' (David et al., 2001, p. 535).

ePortfolios encourage students to take an active role in learning by prompting reflection on practice, supporting self-critique to acknowledge achievements and identify learning needs for future development in clinical, academic, personal and interpersonal domains (Rees et al., 2005; Sidebotham et al., 2018). In the study by Sidebotham et al. (2018, p. 88), 94% of students confirmed that the ePortfolio-based assessment item enabled them to identify personal learning goals and encouraged the development of independent learning, facilitating the 'dual function of learning as a process and a product'.

## **Key theme 2: Deeper learning**

### ***Sub-theme 2.1: Reflection and critical thinking***

Dewey (1933) commented that reflection on individual experiences is critical for making meaning of the experience. Eight papers identified reflective practice as an important part of an ePortfolio (David et al., 2001; Gaba, 2015; Hume & Hamilton, 2019; Karsten, 2012; Laux & Stoten, 2016; Rees et al., 2005; Sidebotham et al., 2018; Tailor et al., 2014). In a paper that highlights how some students use



their ePortfolios, Karsten (2012) encouraged the use of ePortfolio as an opportunity for students to reflect on clinical and academic experiences. Commenting that this bridges the links between theory and practice and highlights critical thinking.

Five papers reported that ePortfolios can be used to influence goal-directed critical thinking (David et al., 2001; Hume & Hamilton, 2019; Karsten, 2012; Rees et al., 2005; Sidebotham et al., 2018). Hume and Hamilton (2019) explored the purpose, content and development phases of a graduate-entry ePortfolio in occupational therapy. The study found that stakeholders preferred ePortfolios which demonstrated critical thinking and clear goal setting to aid in the job recruitment process. Karsten (2012) found that through reflective practice students were able to recognise the connection between theory and practice in the workplace, and were able to set appropriate personal goals.

### **Sub-theme 2.2: Active learning**

Active learning can be defined as a learning activity in which the students participate as opposed to passively taking in information (Keengwe et al., 2014). In this theme six papers described a process of active learning (David et al., 2001; Hume & Hamilton, 2019; Karsten, 2012; Laux & Stoten, 2016; Rees et al., 2005; Sidebotham et al., 2018). In their study of third year midwifery students Sidebotham et al. (2018) found that completing an ePortfolio as a capstone assessment helped students to prepare for graduation. Sidebotham et al. (2018) found that students developed a sense of 'who I am and where I am going' (p. 87). While developing their ePortfolio, students actively applied their learning to preparing for professional practice and were able to determine their own learning needs and learning plans. Another example of active learning documented by Laux and Stoten (2016) was the use of ePortfolio to demonstrate interprofessional education. In this example, students collaborated with their work colleagues outside of their discipline in the development and co-creation of an ePortfolio.

### **Key theme 3: Expanding literacies**

The papers reviewed revealed that ePortfolio use can enhance a range of literacies including critical literacy (Karsten, 2012), information literacy (Hume & Hamilton, 2019; Karsten, 2012), and digital/technology literacy (Gaba, 2015; Hume & Hamilton, 2019; Karsten, 2012; Laux & Stoten, 2016). Gaba (2015, p. 1155) explained that the 'degree of familiarity and comfort a student had with internet technology' influenced how easily students adopted ePortfolio use and although the use of a digital platform for ePortfolio was initially time consuming, the ability to access the platform from a variety of locations was the key benefit. Similarly, Hume & Hamilton (2019, p. 50) found that in addition to digital literacy ePortfolios encouraged graduates to 'develop skills in documentation, organisation and reflective skills', their research concluded that the process of building an ePortfolio shapes professional identity and develops professional accountability as students prepare to enter practice.

### **Key theme 4: Successful implementation**

Eight papers identified that to successfully implement an ePortfolio, the purpose and expected outcomes (product) need to be clearly articulated (David et al., 2001; Gaba, 2015; Hume & Hamilton, 2019; Karsten, 2012; Laux & Stoten, 2016; Rees et al., 2005; Sidebotham et al., 2018; Taylor et al., 2014). Three studies (Gaba, 2015; Hume & Hamilton, 2019; Karsten, 2012) suggested that educators can best support students through the creation of an exemplar ePortfolio to provide clarity around the expectations of the ePortfolio. Gaba (2015, p. 1155) explained that using an exemplar ePortfolio 'clarified and facilitated interns' documentation of their work to meet specific learning objectives [... and ...] facilitated demonstration of these for program accreditation by a national accrediting body'. Several studies highlighted the importance of supporting students in the process of using ePortfolio from a technological standpoint (Gaba, 2015; Hume & Hamilton, 2019; Karsten, 2012). Gaba (2015, p. 1154) identified that '[o]ngoing technical support was provided as needed throughout the year by the program director and/or IT staff.'

Although most papers provided some recommendations around the implementation of ePortfolio, one paper described the steps taken during the implementation of ePortfolio in a Medical curriculum (David et al., 2001, p. 546). The competencies assessed in the ePortfolio were authentic in that they are all directly linked with future practice as a doctor. The steps were:

- (1) Defining the purpose [of the ePortfolio]
- (2) Determining competencies to be assessed [criteria to be assessed]
- (3) Selection of portfolio material [evidence that demonstrates competency]
- (4) Developing a marking system [summative/formative, outcome specifications]
- (5) Selection and training of examiners [explanation of ePortfolio purpose and examination process]
- (6) Planning the examination process [assessment steps, duration]
- (7) Student orientation [explanation of ePortfolio purpose and examination process]
- (8) Developing guidelines for decisions [standards of performance, inter-rater reliability]
- (9) Establishing reliability and validity of evidence [pilot examination processes]
- (10) Designing evaluation procedures [triangulate ePortfolio assessment outcomes with students' performance on other assessments]

## Discussion

The four themes and the respective sub-themes highlight that ePortfolios have been successfully implemented in higher education to support student learning and to demonstrate professional competency in readiness for graduation and future employment. It was also clear from the literature reviewed that for students to be confident in the use of ePortfolio, educators must provide support for students on the use of an ePortfolio through clear instructions and exemplars (Gray et al., 2019).

While there is a broad acceptance of the use of ePortfolios in higher education and some indication that employers may be interested in using ePortfolios for recruitment (Leece, 2005; Patrick-Williams & Bennett, 2010; Yu, 2011), the use of ePortfolios as part of the recruitment process in health and social care is limited (Gheris & Fundaburk, 2008; Leece, 2005; Ward & Moser, 2008). The limited use of ePortfolios in recruitment is largely due to employers' limited knowledge of their potential applications (Leece, 2005; Ward & Moser, 2008), compatibility issues with existing recruitment platforms (Gheris & Fundaburk, 2008; Leece, 2005), and concerns around the authenticity of evidence due to the potential for identity theft (Hume & Hamilton, 2019; Leece, 2005; Strohmeier, 2010).

Employers across multiple professions do appear to have some consistency in the information most useful to include in an ePortfolio. Resumes (Hume & Hamilton, 2019; Ndoye et al., 2012), descriptions of employment and internship experiences (Gheris & Fundaburk, 2008), and certificates and licenses (Hume & Hamilton, 2019; Yu, 2011) however, items that are generally seen as advantages of ePortfolios, like examples of competencies or written samples (Gheris & Fundaburk, 2008; Ward & Moser, 2008), do not gain as much support in regard to recruitment (Strohmeier, 2010).

In the Health and Social Care sectors there does not appear to be widespread use of ePortfolios in relation to the recruitment process. Currently ePortfolios are used to develop skills, knowledge, and personal attributes that support employability (Carter, 2021; Mitchell et al., 2021). Therefore, it appears that the benefit of ePortfolios may not be derived from their use in hiring, but in their ability to develop students' ability to describe their knowledge and skills through continual reflective practice. By reflecting on and evaluating their experiences within each area, students are better able to identify the link between acquiring knowledge, developing understanding, and demonstrating skills, with the outcome being the enhancement of three personal attributes that demonstrate improved

employability: self-efficacy, self-confidence, and self-esteem (Dacre Pool & Sewell, 2007; Strohmeier, 2010).

## Limitations

The limitations to our scoping review include the small number of studies available around the application of ePortfolio in preparing of health and social care graduates for employment. Furthermore, the almost non-existent research with industry, exploring employers' experiences of and opinions on the use of ePortfolio limited our ability to represent their viewpoints in this paper. To ensure that the opinions of appropriate stakeholders are accurately represented, particularly related to the use of ePortfolio in the recruitment process, future research needs to explore the opinions and ideas of employers. A second limitation of this scoping review was the process of theme development during the process of screening studies for inclusion. The themes were developed by one team member, not the whole team, and this may have introduced biases which led to some relevant papers being excluded.

## Conclusion

Our scoping review revealed that ePortfolio is both a product and a process. As a product ePortfolio is a repository for artefacts that represent the student learning journey and readiness for employment. As a process, developing an ePortfolio applies social constructionist approaches to learning which enhance employability and support lifelong learning and in three key areas: Self-Directed Learning, Deeper Learning, and Expanding Literacies. Self-directed learning is enhanced because ePortfolios promote the development of organisation skills and independent learning. Deeper learning is supported through the continual use of reflection and critical thinking, and through the application of active learning approaches. ePortfolios also contribute to expanding students' literacies, particularly information literacy relating to the students' profession and digital or technological literacy.

We found that ePortfolios can contribute constructively to preparing students for future employment however, employer unfamiliarity with the concept of ePortfolio, and issues with compatibility with existing recruitment platforms help to explain the lack of use of ePortfolios in recruitment (Gheris & Fundaburk, 2008; Leece, 2005; Mitchell et al., 2021; Ward & Moser, 2008; Yu, 2011). Therefore, ePortfolios can best be promoted and supported as tools that support students in the development of knowledge, skills and personal attributes that support future employability.

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