

1 **The influence of portfolio aims and structure on student attitudes towards portfolios as**
2 **a learning tool: A Scoping Review.**

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4 Heather Stewart, School of Health Sciences, University of Central Lancashire, Preston, UK

5 Dr. Hazel Roddam, School of Health Sciences, University of Central Lancashire, Preston,

6 UK

7 Dr. Deborah Wisby, College of Health and Wellbeing, University of Central Lancashire,

8 Preston, UK.

9 Professor James Selfe, Faculty of Health, Psychology and Social Care, Manchester

10 Metropolitan University, Manchester, UK

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12 **Abstract.**

13 **Background:** Portfolios are widely used in undergraduate health professional education,
14 however the majority of literature suggests that these are poorly received by students, in
15 terms of being an effective learning tool. **Objectives:** to evaluate whether the aims/purpose or
16 structure/level of standardisation/content of student portfolios influences their attitudes to and
17 perceptions of its use as a learning tool. **Major Findings:** Aims/purpose and structure/level of
18 standardisation/content of portfolios were analysed in relation to student responses in order to
19 determine any relationship between these. The level of information provided in the studies
20 was variable, making analysis difficult, however there appeared to be no clear link between
21 any of these factors and student responses. The interplay of level of support and guidance, the
22 time required for completion of the portfolio, and the role of assessment appear to have the
23 greatest influence on student views.

24 **Conclusions:** Considering the wide use of portfolios in health professional education, student
25 support for these is limited, and further research is required to determine if alternative
26 approaches to portfolio learning can positively influence student attitudes and perceptions.

27 **Key Words:** portfolio; professional education; student; attitude and perceptions; influence on
28 learning

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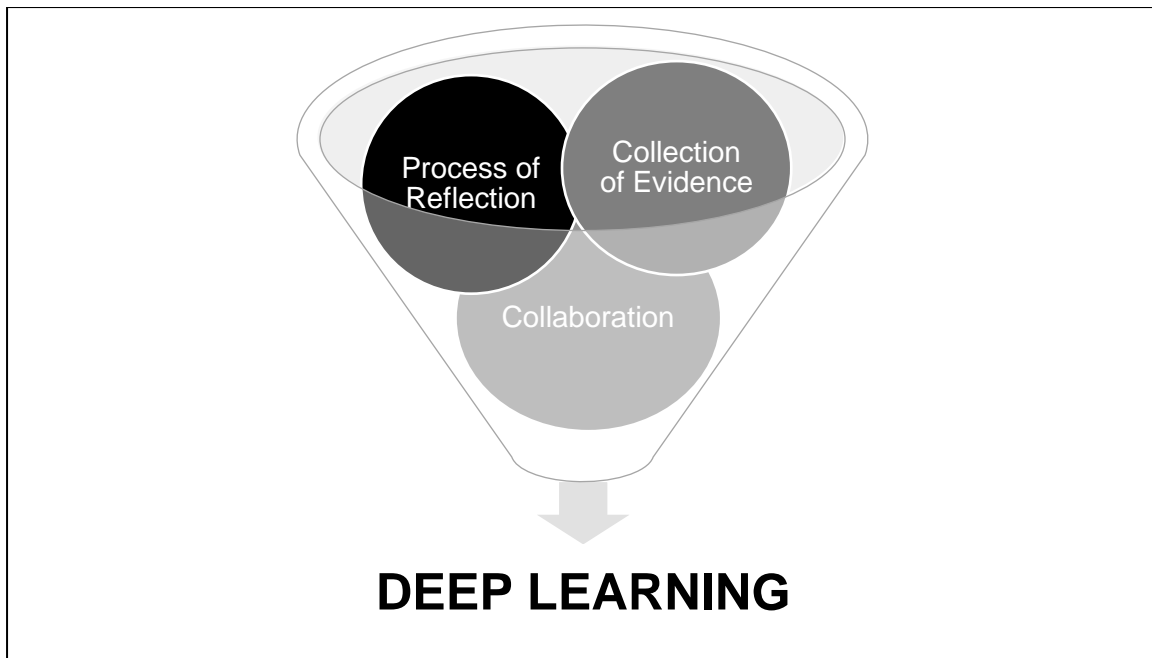
30 **Introduction.**

31 The evidence for the use of portfolios within education began to appear in the 1990's, in
32 teacher education,¹ the arts,² nursing,³ and medical education.⁴ The first published
33 evaluation of portfolio use in Physiotherapy education was in 1997.⁵ There are many varied
34 definitions of a portfolio,⁶⁻⁹ with two clear types of portfolios identified - that of the portfolio
35 as a tool to demonstrate achievement, or a best work portfolio,¹⁰⁻¹³ and the portfolio that is
36 used to aid progress and growth, or a learning portfolio.^{11, 14-15}

37 The reported key benefits of a portfolio within healthcare education, are that it encourages
38 personal reflection on experiences, learning and development,¹⁶ provides a useful link
39 between academic knowledge and clinical practice,¹⁷ makes students more aware of their
40 own learning,¹⁸ and promotes critical thinking.¹⁹ Portfolios should also encourage students to
41 develop the abilities they will need to become independent and self-directed learners.²⁰

42 Personal experience of using portfolios over many years and in different formats with
43 undergraduate Physiotherapy students, suggested that despite the reported benefits listed
44 above, students did not perceive the portfolio to be useful, or to value its completion.

45 A relatively recent portfolio model by Zubizarretta (2008) suggests that three key
46 components need to be included in portfolio development, if students are to learn at a deep
47 level through their use (see Figure 1).²¹ The first component is the inclusion of evidence,
48 followed secondly by the process of reflection, which has been noted to be critical to the
49 success of learning through use of a portfolio.^{22, 23} Finally, the inclusion of collaboration
50 recognises that although professional development is the responsibility of the individual,
51 students beginning this process need guidance, feedback and advice from more skilled and
52 knowledgeable professionals,²¹ and it is suggested that this process of mentoring is the most
53 decisive factor in portfolio success.²⁴



54

55 **Figure 1. Diagrammatic Representation of Zubizarreta (2008)¹⁶ Model of Portfolio**
56 **Learning.**

57

58 In order to consolidate the knowledge and research findings on the use of portfolios in
59 undergraduate health education, as well as to identify gaps within the research, a scoping
60 review was undertaken as part of a course of study at doctoral level. The doctoral review
61 aimed to investigate factors influencing student perceptions of and attitudes to use of
62 undergraduate portfolios in the broadest context. In order to focus the findings for this
63 publication, findings from the review will be discussed in relation to the following two
64 questions –

65

1. Do the aims/purpose of the portfolio influence the students' perceptions of and
66 attitudes towards portfolio use?

66

67

2. Does the structure/format or required content influence the students' perceptions of
68 and attitudes towards portfolio use?

68

69

70 **Methods.**

71 As this research is a scoping review, ethical approval was not sought. Literature searches took
72 place between 10th September and 6th October 2014, using 12 databases (see Table 1); each
73 was searched from the oldest issue available up to August 2014.

74 **Table 1. Databases searched.**

DATABASES SEARCHED
Academic Search Complete
Amed
Biomed Central
British Education Index
Cinahl complete
Embase
Maternity and Infant Care
Medline
ProQuest Hospital Collection
PsychArticles/PsychInfo
Science Direct
Sports Discus

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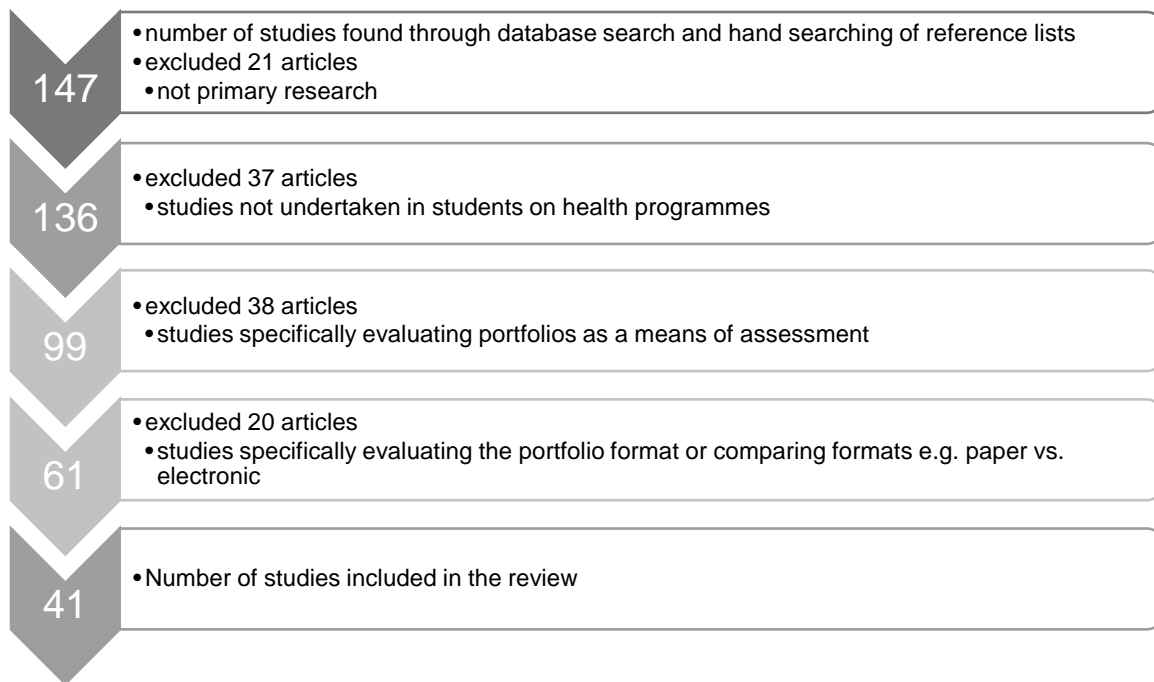
76 Search terms were identified through previous background reading, and were categorised into
77 four themes. Both continuing professional development and its abbreviation, CPD, were
78 included as search terms, in order to broaden the findings from the literature search. Search
79 terms were combined using the Boolean operator AND (see Table 2), and where possible,
80 searches were performed within Title, Abstract, or Keywords to limit the number of hits and
81 improve relevance of results.

82 **Table 2. Search terms and search combinations.**

THEME 1 - Portfolio	THEME 2 - Student	THEME 3 - Learning	THEME 4 - Attitude
Portfolio	Student	Continuing Professional Development	Perception
	Undergraduate	CPD	Attitude
		Lifelong Learning	Preferences
			Views
			Behaviours
			Evaluation
			Purpose
Theme 1 AND Theme 2			
Theme 1 AND Theme 3			
Theme 1 AND Theme 4			
Theme 1 AND Theme 2 AND Theme 4			
Theme 2 AND Theme 3			

83

84 Articles retrieved had to be published in the English Language and provide data on student
 85 perceptions or attitudes towards use of a portfolio to be included in the review. Hand
 86 searching of references lists also produced some included papers.



87

88 **Figure 2. Literature search process.**

89 The initial sample included 147 scientific articles, editorials, commentaries, and opinion
90 pieces. Papers were excluded from this sample using the criteria outlined in the flowchart in
91 Figure 2. The final sample included in the review was 41.

92

93 *Analysis of Literature*

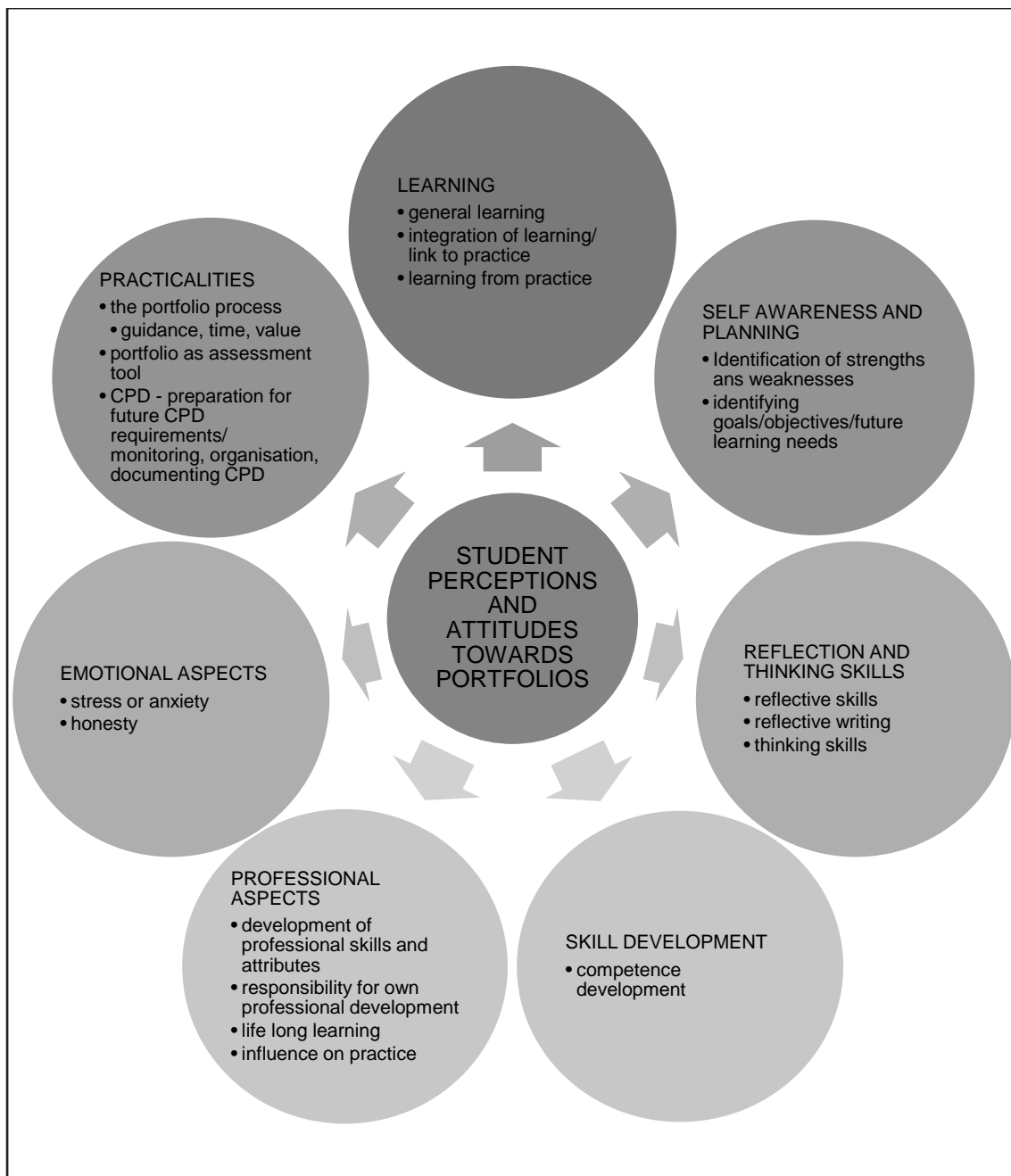
94 One author analysed the research, as this was undertaken as part of a programme of doctoral
95 study, however the analysis was discussed with all authors as part of the supervisory process.
96 On initial reading of the research studies, the first author became familiar with the key ideas
97 and recurrent topics being raised, either from the qualitative comments made by student
98 participants during interviews or focus groups, or from the questions asked and responded to
99 in questionnaires. Following a process of qualitative data analysis as described by Bryman
100 and Burgess (1994)²⁵, these key ideas and topics were then developed into a theoretical
101 framework (see Figure 3), which was discussed and finalised by all authors. Indexing and
102 charting of the empirical data then took place in relation to this framework, with the reported
103 data from each individual study charted as either positive or negative in relation to the
104 student's perception of each the topics identified in Figure 3. These results were then mapped
105 against the identified possible influencing factors – portfolio aims/purpose (see Appendix 1);
106 level of standardisation of the portfolio (see Appendix 2); the basis or format of the portfolio;
107 portfolio content – and findings interpreted to draw conclusions.

108

109 **Results.**

110 *Description of the sample.*

111 Of the 41 studies reviewed, 40 were published in peer-reviewed journals, between 1994 and
112 2014, with the majority published between 2003 and 2012. One study was a thesis, from the

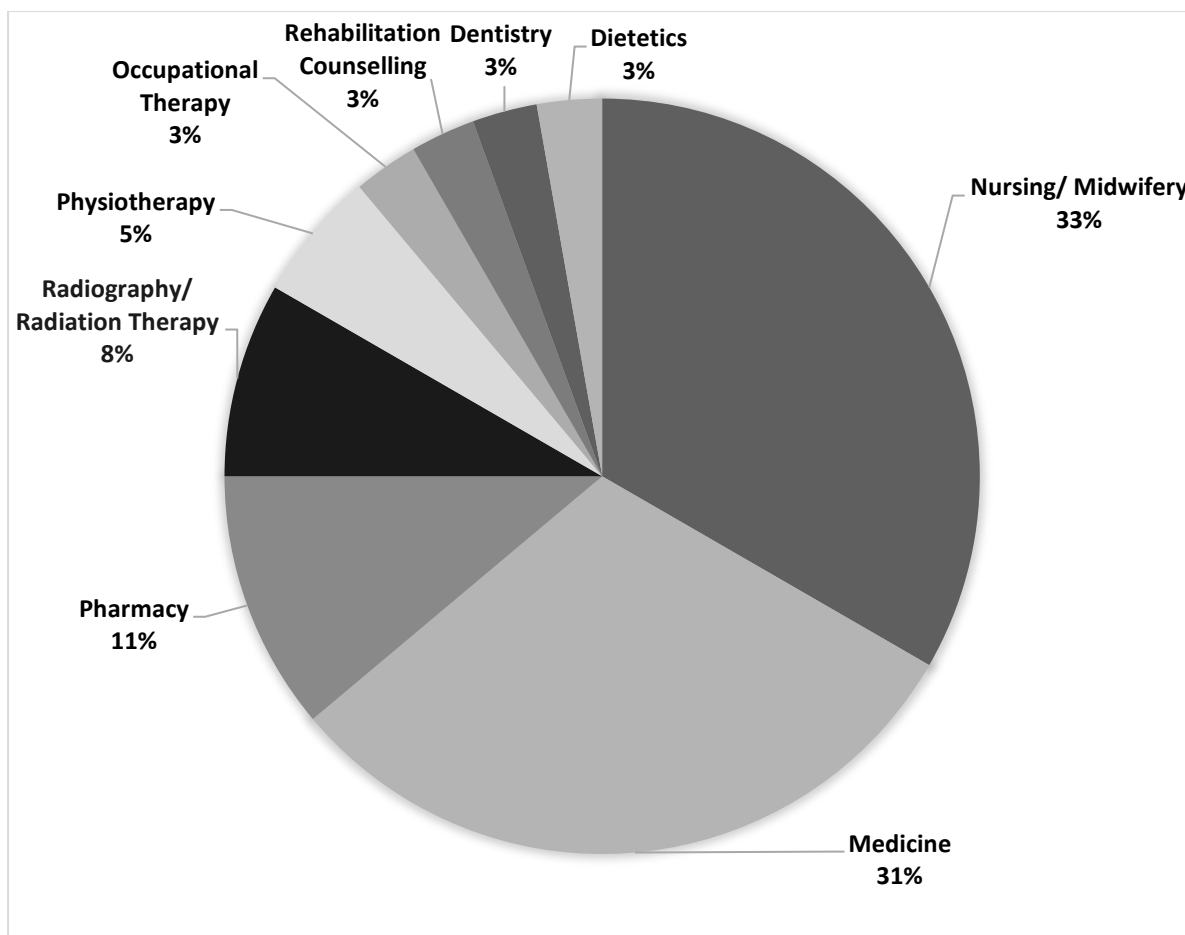


113

114 **Figure 3. Themes emerging from analysis of qualitative and quantitative data.**

115

116 University of Iowa.²⁶ The research was undertaken mainly in the Western world (United
 117 Kingdom (UK) n=16; United States of America (USA) n=10; Europe n=8; Australia and New
 118 Zealand n=3; Canada n=2;) with only one study from Africa,²⁷ and one study from the Far
 119 East.²⁸ Distribution of research by profession is shown in Figure 4.



120

121 **Figure 4 – Distribution of research from different professional groups.**

122 This review included studies with a range of data collection methods. Twenty-four studies
 123 used a questionnaire; some of these were postal, or students completed them in a classroom
 124 and some were completed electronically. Four studies used interviews and four had a mixed
 125 methodology (e.g. a combination of questionnaire and interview, or questionnaire and focus
 126 groups). Three studies analysed the content of the student portfolios as their data collection
 127 method, while focus groups, discussion groups, outcome measures, or presentation and
 128 sharing were each used in one study. Data collection method was unclear in two studies.

129 Detail regarding the subjects of the studies was limited, with three of the 41 studies provided
 130 no information about their student sample.^{31, 43, 50} 34 of the 41 studies provided sample sizes,
 131 ranging from four³⁹ to 413.⁴⁴ Only three studies^{32, 33, 48} provided information regarding the age
 132 of their subjects; the average age of participants in these studies ranged from 25 to 28.

133 Twelve studies provided data regarding the ratio of male to female participants; in all cases,
134 studies had a greater proportion of female subjects. In terms of the stage of study, there was
135 significant variation, and with 11 studies giving detail. Four studies recruited first year
136 students,^{33, 34, 40, 45} three studies included students from across different years of the course,^{28,}
137 ^{32, 38} two studies used students who were partway through their course,^{36, 46} one included only
138 final year students,⁵¹ and one study's participants had recently completed their course.⁴⁸

139

140 *Aims/purpose of the portfolios.*

141 Only 18 of the 41 studies provided information regarding the aims or purpose of their student
142 portfolio. These fell into six categories – a collection of evidence,²⁹⁻³⁵ a means of developing
143 reflective skills,^{27, 30, 33-36} to develop self-awareness and professional identity,^{30-31, 37-38} for the
144 purpose of assessment,^{30-32, 36, 38-41} a communication tool,^{32, 35, 38, 42-43} and to develop students'
145 learning processes.^{30-32, 35, 38, 42, 44} Overall there was a lack of standardisation of the aims
146 across the portfolios described, and a number of studies' portfolios had more than one aim.

147

148 *Structure, format and content of the portfolios.*

149 The research found generally lacked detail in terms of the structure, format or level of
150 standardisation of their student portfolios. 16 of the 41 studies gave some indication of
151 whether their portfolio was of a standardised structure, semi-standardised or completely
152 flexible. Two early studies, one in Physiotherapy,⁵ and one in medicine,²⁹ presented portfolios
153 at opposite ends of the standardisation spectrum, with one providing a rigid structure⁵ and the
154 other no standardised structure at all.²⁹ More recent studies described portfolios that have
155 reached a semi-standardised compromise, providing some overarching structure in terms of
156 the expectations of the portfolio (for example providing section headings or guidance re
157 formatting), while allowing students flexibility about what evidence they collect, or how this

158 is used to demonstrate achievement of requirements. Eight studies based their portfolio
159 structure on professional standards or competency frameworks,^{5, 31-32, 36, 39, 45-47} three around
160 programme or module learning outcomes,^{40-41, 44} and two around theoretical frameworks of
161 learning.^{35, 43}

162 The content of the student portfolios varied widely, with 25 of the 41 studies giving
163 information about content. As part of this review, content was grouped into seven broad
164 categories – ethical issues and dilemmas,^{28, 40, 43} reflective elements,^{5, 31-33, 36, 38, 40, 43-44, 47-49}
165 academic components such as assignments or classroom notes,^{5, 28-30, 35, 38-42, 45, 49} evidence of
166 working with others,^{31, 37, 40, 49} checklists and documents,^{5, 28-29, 32, 35-37, 42, 45, 47-49} patient/client
167 related evidence,^{5, 27-28, 30-32, 34-35, 37, 39-40, 42-44, 46, 49} and learning agreements and personal
168 development plans.^{5, 38, 40, 42-43, 45-46, 48} There is a lack of clarity as to whether elements
169 categorised as working with others and patient/client experiences are students' reflections on
170 these experiences or simply descriptive documents evidencing that this was done. Many of
171 the studies described portfolios requiring content from more than one of these categories.

172

173 ***Student perceptions and attitudes towards portfolios.***

174 All 41 studies provided either quantitative and/or qualitative data regarding students'
175 perceptions and attitudes towards the use of a portfolio. A range of data collection methods
176 were used, with no specific method being favoured by authors from any one professional
177 group.

178

179 **Discussion.**

180 ***Do the aims/purpose of the portfolio influence the students' perceptions of and attitudes***
181 ***towards portfolio use?***

182 Based on the data provided, it is difficult to draw any strong conclusions regarding any
183 relationship between aims or purpose of the portfolios, and the students' perceptions of and
184 attitudes towards use of a portfolio (see Appendix 1). In general terms, comments relating to
185 the influence of the portfolio on practice, the emotional factors involved in the portfolio, the
186 time taken to complete the work, the link between theory and practice, and the guidance
187 given were negative, irrespective of the aim of the portfolio. The question regarding whether
188 students saw any value to completion of a portfolio was wholly answered negatively across
189 all aims. Interestingly, improvement in reflective skills was reported by the majority of
190 students, and although students did not value their portfolios, they could see that it had
191 prepared them for future practice regardless of its intended purpose.

192 Students whose portfolio aimed to specifically develop reflective skills,^{27, 30-31, 33-36} responded
193 positively with regard to learning from practice, and the development of self-awareness,
194 reflective skills and thinking skills. These students also appeared to have fewer concerns
195 regarding the time taken to complete the portfolio.

196 Similarly, students whose portfolio aim was to meet assessment criteria,^{29, 31-32, 36, 38-41} also
197 responded positively with regard to reflective and thinking skills, but also felt that the
198 portfolio enabled them to develop their professional skills and attributes, and a responsibility
199 for their own learning. Students in this group of studies were concerned about the guidance
200 given for portfolio completion more strongly than others, and this may have been because of
201 the specific focus on assessment in the aims of the portfolio. These students also reported that
202 they felt unable to be completely honest in the content of their portfolios due to it being
203 assessed. Finally, there were mixed views from students whose portfolio aim was assessment,
204 with regard to the portfolio as an assessment tool, compared with the majority of other
205 studies, where the student opinion was mainly negative.

206 Studies where collecting evidence was the aim generally found students reported less
207 negatively than in studies with other aims.²⁹⁻³⁵ This is perhaps because the lack of
208 requirement for critical thinking, analysis or reflection meant students did not find the task
209 challenging. The overall lack of positive comments from student responders in these studies
210 ²⁹⁻³⁵ could also suggest that the students found the creation of their portfolio unstimulating.

211

212 ***Does the structure/format or required content influence the students' perceptions of and***
213 ***attitudes towards portfolio use?***

214 As with the previous discussion, it is difficult to draw any strong conclusions regarding the
215 relationship between structure, format or content and student responses to the studies (see
216 Appendix 2). Across all formats (level of standardisation; basis, type of content required) of
217 the portfolios described in the research, the general opinion of students was negative in terms
218 of time requirements, level of guidance provided and the value of completing a portfolio.

219 Overall, semi-standardised formats received a higher proportion of positive comments,^{29, 32, 36,}
220 ⁴⁸ and standardised formats received the highest proportion of negative comments.^{5, 27, 31, 33-34,}
221 ^{41-43, 47, 49-50} Semi-standardised portfolios that allowed some flexibility in terms of content or

222 format appeared to encourage students to think more deeply,⁵¹ learn from practice, take
223 responsibility for their own development, and recognise the need for lifelong learning.^{30, 32, 36,}

224 ⁴⁸ Both standardised or semi-standardised formats did allow students to see that developing
225 their portfolios had prepared them for future CPD requirements.

226 In terms of the basis for the portfolio, those based on professional standards,^{5, 27, 32, 36, 46}
227 generated more positive responses to the themes than those based on either competency
228 standards,^{39, 45, 47} learning outcomes,^{40-41, 44} or theoretical concepts.^{35, 43}

229 When analysing the content of the portfolios against the students' views, similar themes
230 arose, with no particular type of content showing specifically positive or negative comments.

231 Across all the studies giving detail of content, students responded positively regarding
232 development of reflective skills, taking responsibility for their own learning, understanding
233 the role of lifelong learning, and being prepared for the future. Thinking skills received
234 mainly positive responses.

235 Returning to the portfolio model as described by Zubizarretta (2008), several comments can
236 be made.²¹ Firstly, by nature of the definition of a portfolio, all of the studies required the
237 students to collect evidence, although it is not clear in all studies what this included, or
238 whether there was any requirement for critical writing about the evidence collected. The
239 findings from this review of the literature suggest that pure collection of evidence does not
240 elicit strong feelings from students, either positively or negatively, suggesting perceived lack
241 of achievement and lack of stimulation. Secondly, although the aims of only seven studies
242 required the need for reflection, the majority of studies did in fact include this element, and
243 students responded positively in all studies regarding the development of reflective skills.

244 Thirdly, the findings with regard to collaboration are limited, and so it is difficult to draw
245 firm conclusions about how student support in the portfolio-building process influences
246 whether students value their portfolios or achieve deep learning from them. Students
247 completing standardised portfolios felt restrained by having too much guidance,⁵ yet not
248 enough guidance left students feeling confused about what was expected.^{33, 35-36, 41, 44, 49} It is
249 also unclear whether, when answering questions about guidance, students are referring to
250 face-to-face guidance, which would be considered collaboration or mentoring,²¹ or whether
251 they are referring to written instruction on how to complete their portfolio. The challenge for
252 educators appears to be creating a balance between enough guidance so that students feel
253 empowered to undertake the task without stifling their creativity, ensuring all members of the
254 course team involved in student support understand the process, the allowances for flexibility

255 and definitive requirements, whilst also factoring in the need for objectivity and parity if the
256 portfolio is to be assessed.

257 Considering the current drive by professional and statutory bodies to enforce CPD within
258 qualified health professionals in both the UK and around the world,⁵²⁻⁵⁷ it is encouraging that
259 students felt that using a portfolio prepared them for their future CPD requirements.

260 However, this move to regulation of CPD may have influenced educators to design
261 undergraduate portfolios that allow students to meet these requirements, to the detriment of
262 developing as learners through reflecting on the experiences under the guidance of a more
263 experienced practitioner.

264 Only one study, by Dolan et al (2004), described a portfolio whose aims incorporated all of
265 these three elements, yet despite this, these UK-based student nurses' attitudes towards and
266 perceptions of their portfolio remained largely negative³⁵. While they responded positively
267 regarding its use as a reflective tool, they did not value the portfolio and gave it a low
268 priority, and 63% had never used the portfolio as a result of their clinical experiences. The
269 authors concluded that the lack of value was because the portfolio was not assessed, but
270 rather used to stimulate discussion with tutors relating to progress through the course, and
271 goals for future employment. Although only one study, this throws into question whether the
272 three elements required in a portfolio as described by Zubizarretta (2008) actually do produce
273 deep learning.²¹

274

275 **Limitations.**

276 There are several limitations to this study. Not all of the literature relating to student
277 portfolios was reviewed; as part of the doctoral study, a conscious decision was taken to
278 exclude any papers specifically exploring portfolios as an assessment method, or studies
279 comparing different types of portfolios, e.g. paper vs. e-portfolios. This means that some data

280 relating to students' attitudes to or perceptions of portfolios may have been missed. Only one
281 author reviewed and analysed the literature, and therefore this could have introduced bias to
282 the process. Lack of detail within the studies regarding all of the elements considered – aims,
283 purpose, structure, standardisation, content – means that conclusions have been drawn with
284 some missing information.

285

286 **Conclusion.**

287 Portfolios are widely used within higher education, and particularly in pre-registration
288 education of health professionals. There are several benefits suggested to their use, including
289 encouragement of reflection, providing links between academic knowledge and clinical
290 practice, promoting critical thinking, and development of independent and self-directed
291 learners. One model of portfolio learning suggests evidence collection, reflection and
292 collaboration with more experienced colleagues are all required for students to achieve deep
293 learning through the use of a portfolio. The evidence from this review suggests that factors
294 such as portfolio aims, purpose, structure, format and content have little influence on
295 students' perceptions of or attitudes to the use of a portfolio as a means of learning, with
296 responses within studies being mainly negative in relation to the value of the portfolio, the
297 time required to undertake portfolio work, and the guidance given related to this work.
298 Students generally reported positively in terms of development of reflective skills and being
299 more prepared for future professional CPD requirements as a result of using a portfolio.
300 While the evidence is limited regarding the three requirements of evidence collection,
301 reflection and collaboration,²¹ it is proposed that even the inclusion of all three of these
302 elements does not appear to improve students' generally negative views on portfolios.
303 Despite the positive responses with regard development of reflective skills as part of using
304 their portfolios, students did not see the benefit of this, and further research should explore

305 whether this is because they do not value reflection, or whether they do not understand the
306 purpose of it, in relation to their practice. It is also evident that portfolios continue to be used
307 by educators, despite the negative attitudes from students regarding their use, and further
308 exploration is required to determine how or if it is possible to enable students to engage in
309 portfolio learning, in order to achieve the benefits that are suggested within the literature.

310

311 **Key Messages.**

312 *What is already known on this topic.*

313 Portfolios are widely used within higher education, and particularly within the education of
314 health professionals. There is wide variety within these portfolios, in terms of aims, purpose,
315 structure, format, content, and inclusion in assessment, across and within the disciplines.

316 Despite large volumes of literature evaluating the use of portfolios as learning tools, there has
317 been relatively little discussion regarding the factors influencing student engagement and
318 recognition of value of portfolio learning.

319 *What this study adds.*

320 This study showed that there does not appear to be a clear link between the aims of a
321 portfolio, its structure or content, and students' attitudes to or perceptions of portfolios as a
322 means of learning. Regardless of aims, structure, content, students generally feel the portfolio
323 assists in development of reflective skills and prepares them for the future CPD requirements.

324 However, there appears to be interplay between a number of factors, which impact on the
325 value students place on their portfolios, such as the role of assessment, the guidance and
326 support provided, and the time implications of maintaining and developing their portfolios.

327 Educators need to consider these factors when deciding how to design portfolios within their
328 programmes of study, and should clearly articulate the purpose of this method of learning to
329 students, in order to try to improve the value given to portfolio use.

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475 **Appendix 1 - Influence of Aims/Purpose of Portfolio on Student Responses to Themes**
 476 **(number = the number of studies in which students had this response)**

AIMS OR PURPOSE OF PORTFOLIOS	Collection of evidence (N=8)		Reflection (N=7)		Self-Awareness (N=4)		Assessment (N=8)		Communication (N=5)		Learning Process (N=7)	
	positive	negative	positive	negative	positive	negative	positive	negative	positive	negative	positive	negative
Learning	1	1	1	1			3	2		1	2	2
Theory to Practice Link						1		1	1	1		1
Learning from Practice			1				1	1				
Self-awareness			1			1	2	1		1		1
Reflective skills	1		2		2		2		2	1	2	
Reflective Writing					1	1	1	1	1		1	1
Thinking Skills			1				2		1			
Skill Development							1	1	1		1	
Professional Skills and Attributes						1	1			1		1
Responsibility for own development			1				1					
Lifelong Learning	1		1								1	
Influence on Practice		1		2				1		1		1
Emotional aspects, stress, anxiety			1	1		1	2	2		1	1	2
Honesty								1				
Guidance given				1				2				1
Time taken	1							3		2		2
Value of portfolio		1		2				2		2		3
Assessment by portfolio		1	1			1	3	3		2		2
Preparation for the future	2		2		1		1		3		3	

478 **Appendix 2 – Influence of Level of Standardisation of Portfolio on Student Responses to**
 479 **Themes (number = number of studies in which students had response)**

STANDARDISATION OF PORTFOLIO	Flexible (N=5)		Semi standardised (N=4)		Standardised (N=11)	
	positive	negative	positive	negative	positive	negative
Learning	3	2	1	3		3
Theory to Practice Link					1	
Learning from Practice			1			
Self-awareness	2	1	1			
Reflective skills	1		2		3	
Reflective Writing					1	1
Thinking Skills	1	1	2		2	
Skill Development						1
Professional Skills and Attributes	1					
Responsibility for own development			2			
Lifelong Learning			2			
Influence on Practice	1					
Emotional aspects, stress, anxiety	2	2	1	1		
Honesty						1
Guidance given	1	2		1		3
Time taken				1		3
Value of portfolio		2	1	1	1	4
Assessment by portfolio	1		1	1	1	
Preparation for the future			1		3	

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