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

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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
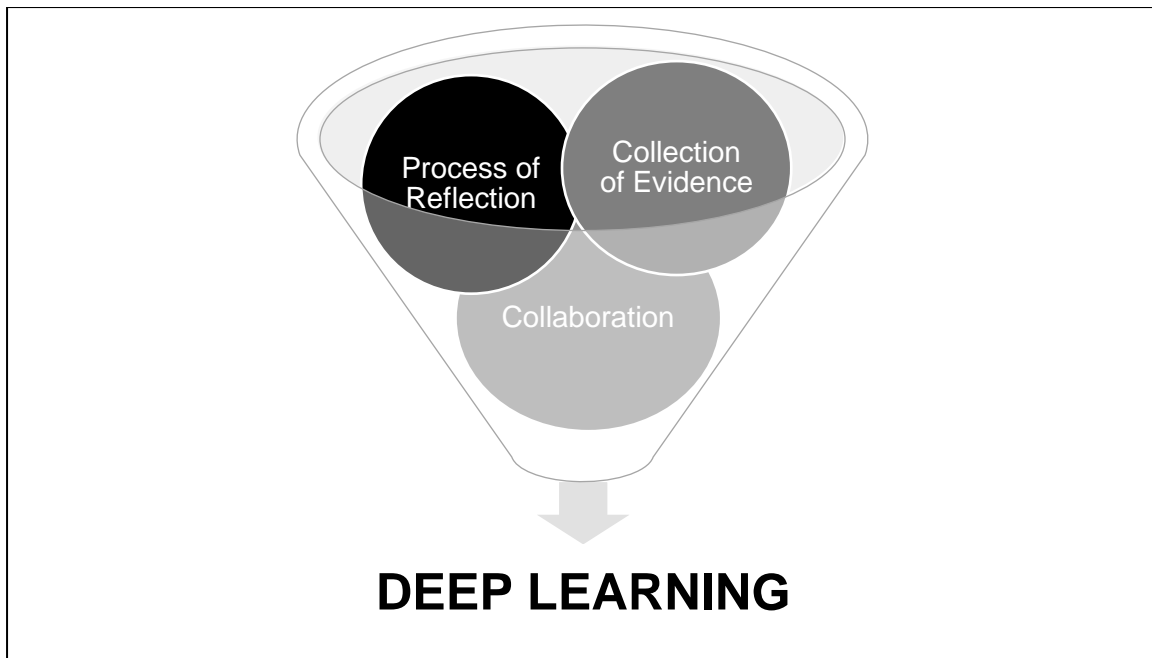
28 learning

29

Introduction.

The evidence for the use of portfolios within education began to appear in the 1990's, in teacher education,[1] the arts,[2] nursing,[3] and medical education.[4] The first published evaluation of portfolio use in Physiotherapy education was in 1997.[5] There are many varied definitions of a portfolio,[6-9] with two clear types of portfolios identified - that of the portfolio as a tool to demonstrate achievement, or a best work portfolio,[10-13] and the portfolio that is used to aid progress and growth, or a learning portfolio.[11, 14-15]

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

Personal experience of using portfolios over many years and in different formats with undergraduate Physiotherapy students, suggested that despite the reported benefits listed above, students did not perceive the portfolio to be useful, or to value its completion. A relatively recent portfolio model by Zubizarretta (2008) suggests that three key components need to be included in portfolio development, if students are to learn at a deep level through their use (see Figure 1).[21] The first component is the inclusion of evidence, followed secondly by the process of reflection, which has been noted to be critical to the success of learning through use of a portfolio.[22, 23] Finally, the inclusion of collaboration recognises that although professional development is the responsibility of the individual, students beginning this process need guidance, feedback and advice from more skilled and knowledgeable professionals,[21] and it is suggested that this process of mentoring is the most decisive factor in portfolio success.[24]

54

Figure 1. Diagrammatic Representation of Zubizarretta (2008)[16] Model of Portfolio Learning.

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

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

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

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

75

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.

147
- number of studies found through database search and hand searching of reference lists
- excluded 21 articles
  - not primary research

136
- excluded 37 articles
  - studies not undertaken in students on health programmes

99
- excluded 38 articles
  - studies specifically evaluating portfolios as a means of assessment

61
- excluded 20 articles
  - studies specifically evaluating the portfolio format or comparing formats e.g. paper vs. electronic

41
- Number of studies included in the review

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.
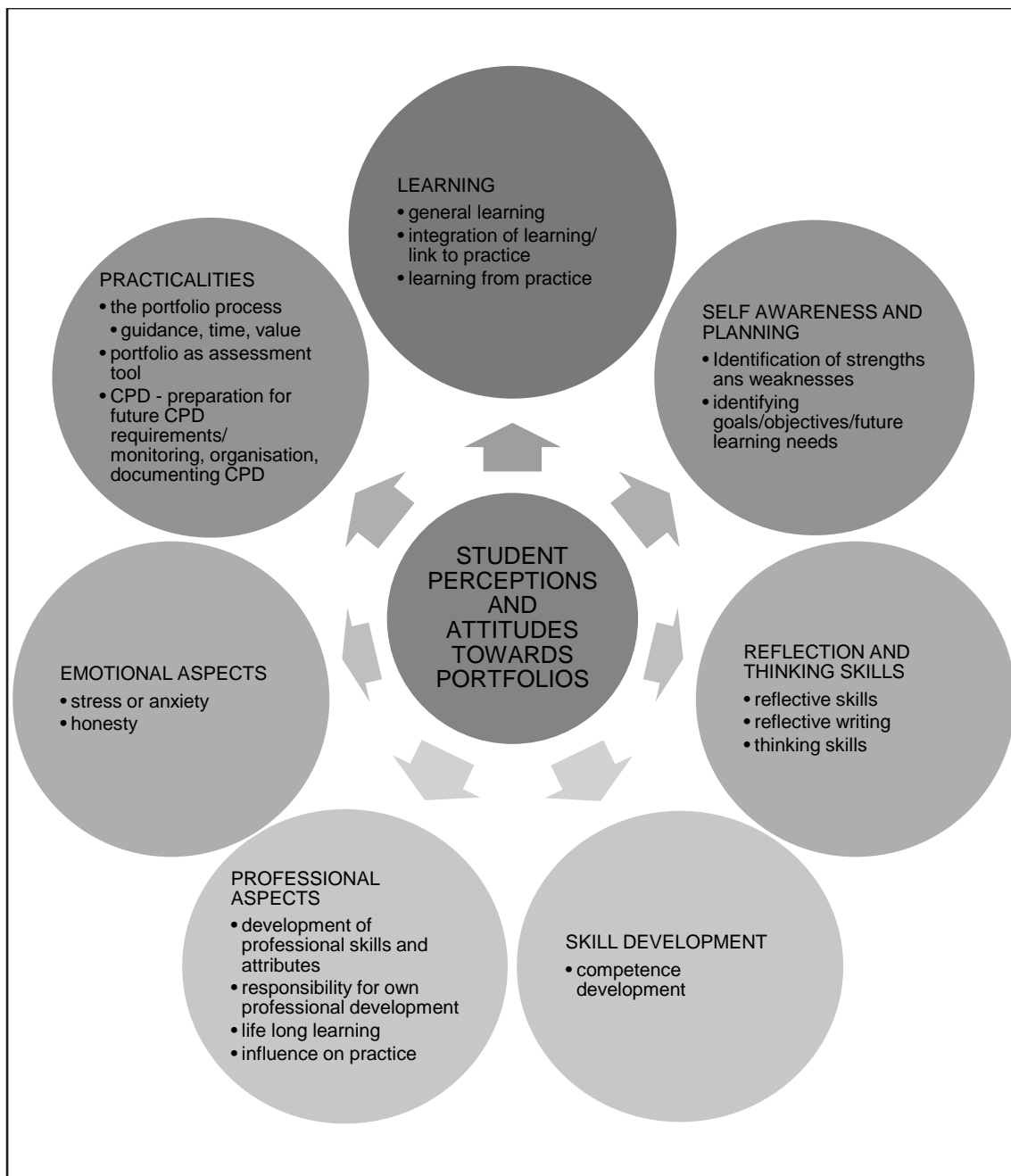
92

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

The following themes are shown in the figure:

LEARNING
- general learning
- integration of learning/ link to practice
- learning from practice

SELF AWARENESS AND PLANNING
- Identification of strengths ans weaknesses
- identifying goals/objectives/future learning needs

REFLECTION AND THINKING SKILLS
- reflective skills
- reflective writing
- thinking skills

SKILL DEVELOPMENT
- competence development

PROFESSIONAL ASPECTS
- development of professional skills and attributes
- responsibility for own professional development
- life long learning
- influence on practice

EMOTIONAL ASPECTS
- stress or anxiety
- honesty

PRACTICALITIES
- the portfolio process
- guidance, time, value
- portfolio as assessment tool
- CPD - preparation for future CPD requirements/ monitoring, organisation, documenting CPD

STUDENT PERCEPTIONS AND ATTITUDES TOWARDS PORTFOLIOS

113

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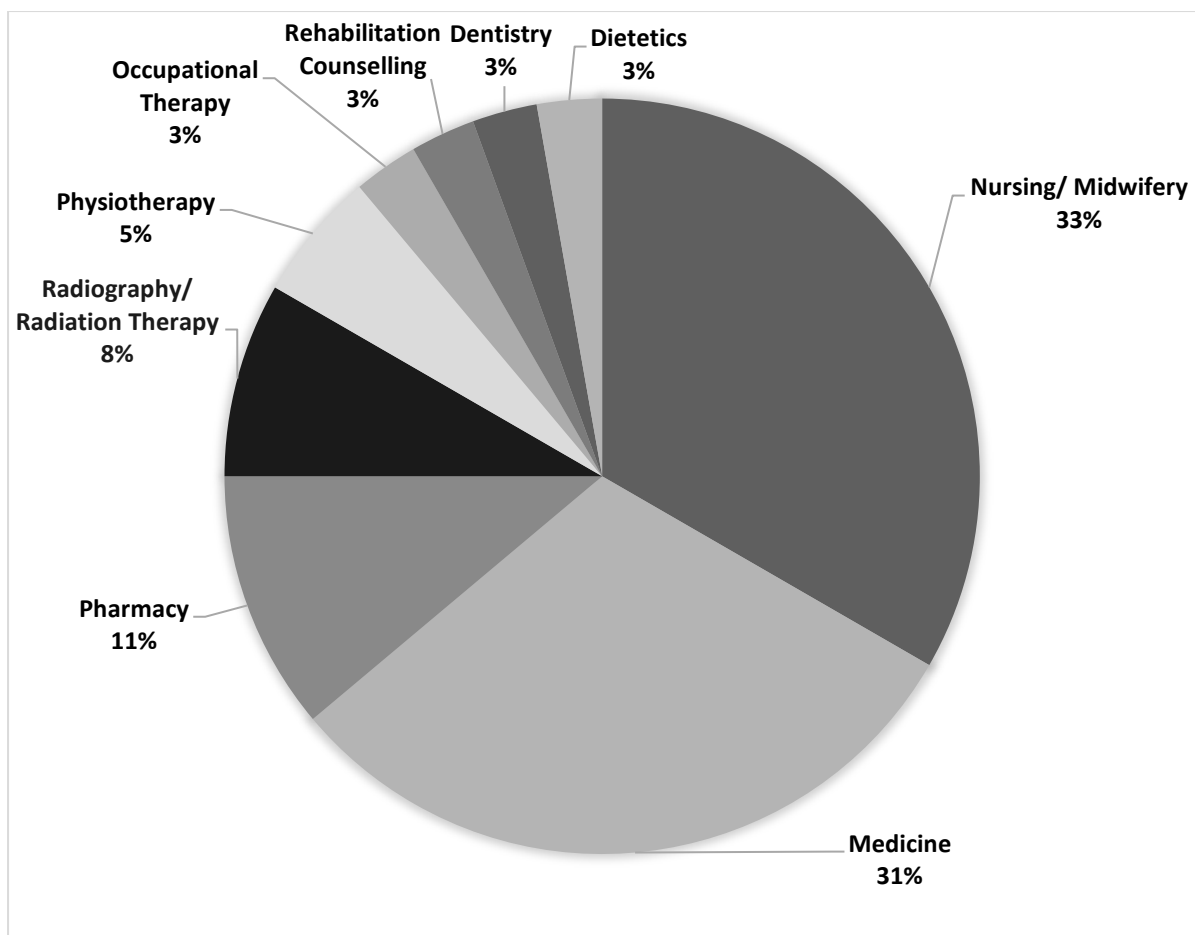
Figure 4 – Distribution of research from different professional groups.

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

Detail regarding the subjects of the studies was limited, with three of the 41 studies provided no information about their student sample.[31, 43, 50] 34 of the 41 studies provided sample sizes, ranging from four[39] to 413.[44] Only three studies[32, 33, 48] provided information regarding the age 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 structure[5] 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 negative[35]. 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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AIMS OR PURPOSE OF PORTFOLIOS THEMES OF STUDENT RESPONSES	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	

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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 / THEMES OF STUDENT RESPONSES	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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