Introducing the use of a semi-structured video diary room to investigate students' learning experiences during an outdoor adventure education groupwork skills course

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5   Experiences during an Outdoor Adventure Education Groupwork Skills Course

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9   **Author note**

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34   **Abstract**
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36   Outdoor adventure education courses are used in higher education to develop transferable skills such as

37   groupwork and problem-solving skills. There is a need for exploratory investigation into students' perceptions of

38   this experience. This study aimed to develop an innovative qualitative data collection method, and to use it to

39   explore students' perceived learning processes and developmental outcomes when taking part in an outdoor

40   groupwork skills course. Participants (n = 40) were undergraduate engineering students who were taking part in

41   the 3 day residential course as part of their degree course. Students' experiences were captured whilst immersed

42   in the course, using a semi-structured video diary room. Participants entered the diary room at different time

43   points throughout the course and responded to open-ended questions. Following a thematic analysis, students

44   were found to arrive on the course with mixed feelings towards groupwork and expected learning outcomes.

45   Activities were enjoyable yet challenging, revealing students' weaknesses and demanding a range of skills and

46   coping methods. The outdoor environment added novelty, risk and natural consequences. Students reported

47   developing a range of skills in groupwork, adaptability, persistence, planning, problem-solving, time-

48   management, communication, leadership, cooperation, group reflection and team spirit, as well as benefits to

49   physical activity, self-confidence, self-awareness, peer and staff relationships and internationalisation. These

50   findings provide a base for future investigation into the long-term impact on student development and skill

51   transfer. The semi-structured video diary room yielded rich data, contributing to the literature by offering a

52   simple, yet effective, qualitative research method that can be implemented in a variety of contexts.

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65   **Introducing the use of a Semi-Structured Video Diary Room to Investigate Students' Learning**

66   **Experiences during an Outdoor Adventure Education Groupwork Skills Course**

67   Developing transferable skills in groupwork, problem-solving, task management and leadership can

68 enhance student success during higher education (Prichard, Bizo, & Stratford, 2006). Graduate employers often

69 value these skills over technical knowledge and degree classifications (Branine, 2008; CBI, 2009), although they

70 are not always sufficiently developed in graduates (Athiyaman, 2001; Bennett, 2002; CBI, 2011). Universities

71 have been criticised for focusing on academic ability and didactic teaching methods, leaving the development of

72 emotional and behavioural skills to chance (Buller & McEvoy, 1990; Roberts, 2009). In response, some

73 institutions provide outdoor adventure education (OAE) courses with the aim of developing these transferable

74 skills (Buller, McEvoy, & Cragun, 1995; Elkin, 1990; Steiner, Arthur, & Beech, 2008). OAE involves small

75 groups placed in a wilderness setting to complete group problem-solving activities that require intense group

76 interaction and facilitation (Hattie, Marsh, Neill, & Richards, 1997).

77   In higher education, OAE has been shown to improve decision making, communication, group

78 cohesion, self-awareness, social support, self-confidence, resilience, leadership and interpersonal skills

79 (Breunig, Connell, & Young, 2010; Ewert & Yoshino, 2011; Gass, Garvey, & Sugerman, 2003; Kass &

80 Grandzol, 2011; Mazany, Francis, & Sumich, 1997; Sibthorp, 2003). Although these findings are promising,

81 there are number of limitations within this literature.

82   Firstly, research includes long *wilderness programs* lasting several weeks. This type of OAE usually

83 involves expeditions (e.g., sailing and mountain climbing) with unstructured learning processes and outcomes

84 (Mazany et al., 1997). However, due to financial and time constraints, institutions often provide more time

85 efficient *outdoor-centred* courses lasting two to five days (Steiner et al., 2008; Wagner, Baldwin, & Roland,

86 1991). Students typically stay at an outdoor pursuits centre and take part in structured group problem-solving

87 activities (e.g., ropes courses and raft building) aimed to develop specific interpersonal and task management

88 skills (Steiner et al., 2008). Less research has focused on outdoor-centred courses in higher education and, as

89 these courses tend to be shorter and more structured, findings from wilderness programs may not generalise.

90   Secondly, research has focused on the effects of OAE on intact groups. For example, students reported

91 an increase in their groups' communication and decision making ability following a 4 day course (Mazany et al.,

92 1997). Whilst valuable, evaluations should also address whether individuals develop more transferable skills

93 benefitting them in the future, beyond their current group.

94   Finally, studies are limited by the use of questionnaires measuring a narrow range of course outcomes.

95   Retrospective recall within questionnaires is also subject to recall bias, often leading to inaccurate accounts of

96   an experience (Tanur, 1994). Consequently, these assessment methods may have restricted the scope of

97   investigation to what the researcher expects to find, rather than exploring the experience more broadly, through

98   the eyes of the participant. As a result, the full range of course outcomes, and the processes students go through

99   to reach these outcomes, may not be revealed. Qualitative methodology should provide this richer, broader and

100 less restrained understanding of the experience (Howitt, 2010).

101 **The Present Study**

102   This study investigated undergraduate students' learning experiences during a 3 day outdoor-centred,

103 groupwork skills course. Whilst this course is employed to develop undergraduate and postgraduate students'

104 groupwork skills across a range of disciplines, including arts and law and the life, environmental, physical and

105 social sciences, this study focuses on its use in engineering. The aim was to understand students' perceptions of

106 the experience and the range of course outcomes, while students were immersed in the course. To achieve this

107 aim, we developed an innovative qualitative measurement tool, namely a semi-structured video diary room.

108 **Video Diary Room**

109   Inspired by reality television programs, video diary rooms have been used within educational, health

110 and corporate sectors to evaluate learning experiences (Poole, 2007), conduct service evaluations (NHS North

111 West, 2010), and evaluate staff training and gather customer feedback (Cliff Productions, 2012). A video diary

112 room involves momentarily taking participants out of an experience, and into a private space, to reflect verbally

113 on that experience in front of a video camera. This approach overcomes difficulties people face when expressing

114 themselves through written diaries (Punch, 2002). However, video diary rooms have not been widely used as a

115 qualitative method in scientific research. To the authors' knowledge, only two peer-reviewed publications have

116 previously implemented a form of video diary room methodology.

117   Noyes (2004) used a video diary room, alongside face-to-face interviews, to investigate children's

118 learning dispositions. The diary room offered an increased depth and freedom of speech and less reliance on the

119 rapport between researcher and participant. A video diary room method was also used by Buchwald, Schantz-

120 Larsen, and Delmar (2009) to investigate children's experiences during various life-changing situations.

121 Participants were each given a video camera and asked to record their own entries over a period of time. Similar

122 to the approach used by Noyes, participants were allowed the freedom to discuss anything within a broad theme

123 that was given to them before entries commenced. Buchwald and colleagues considered the video entries to be a

124   "useful supplement to more conventional methods... capable of eliciting data that would not otherwise be

125   obtained" (p.12).

126   Despite these strengths, both studies highlighted limitations with their methods, ranging from practical

127   issues such as ensuring entries were made at critical time points, to issues that may have compromised the

128   credibility and trustworthiness of the results. For example, participants avoided entries during negative

129   experiences and the pre-planned nature of the entries allowed participants time to consider what they felt would

130   be an appropriate response, increasing the likelihood of social desirability bias. In addition, without having

131   questions for participants to follow during entries or an interviewer present, discussion went off track and

132   resulted in large amounts of irrelevant responses (e.g., playing up to the camera) unrelated to the question

133   addressed by the study.

134   In contrast, the present study used semi-structured questioning, similar to that employed in more

135   conventional qualitative techniques. This approach allows a researcher to direct responses to an area of interest,

136   whilst still giving the respondent flexibility to construct their personal view of an experience (Smith, 2009).

137   Additionally, the present study invited different participants to give diary room entries at various time points and

138   during different observed experiences, thus ensuring spontaneity and variety in responses. Both Noyes (2004)

139   and Buchwald et al. (2009) followed the same participants over time and found entries to increase in depth as

140   participants became more comfortable in front of the camera. It is of interest as to whether a single participant

141   entry approach will still lead to rich data. Finally, as Noyes and Buchwald used a diary room method with

142   children, this study explored whether students in higher education displayed the same openness when sharing

143   their experiences in front of a camera.

144   In summary, the aim of the present study was to explore the learning experiences of higher education

145   students taking part in a 3 day groupwork skills course, using a semi-structured video diary room.

Method

147   **Participants**

148   Twenty nine participants were recruited from a population of 100 Mechanical Engineering (BSc, year

149   three) undergraduate students, who were taking part in a short OAE course. An additional 11 participants were

150   recruited from a population of 106 Electronic, Electrical and Computer Engineering (BSc, year two)

151   undergraduate students, who were also taking part in OAE, resulting in a total of 40 participants (mean age =

152   20.55 (SD = 1.09) years). The majority were male ($n = 32$), and were a mixture of home/EU ($n = 22$) and

153   international ($n = 18$) students; about half ($n = 21$) spoke English as their first language. All of the students were

154   scheduled to take part in a group project module when returning to university following OAE. However, before

155   OAE, students reported limited groupwork experience and had not received any formal groupwork skills

156   training within their degree course. Approval for conducting the study was granted by the University's Ethics

157   Committee.

158   **Outdoor-centred Course**

159   The 3 day residential course was held at a University-owned outdoor pursuits centre in the North West,

160   UK. The course aims to develop transferable skills in groupwork, communication and group problem-solving.

161   Iterations of the course were attended by 30 to 36 students, who were randomly organised into groups of 6 to 8.

162   These groups participated in outdoor problem-solving activities throughout each day. The activities were

163   facilitated by trained instructors who observed the groups' progress and led regular reflective discussions.

164   Activities progressed from 30 minute 'ice breakers', such as reaching a marker across a rough terrain whilst

165   blindfolded, to more complex activities, such as raft building and ropes courses. All activities required the group

166   to work together to complete objectives. In addition, they were issued with a group housekeeping rota, and there

167   was time off in the evenings to relax and socialise.

168   **Semi-Structured Video Diary Room**

169   A semi-structured video diary room was set up in a private yurt. The room contained a digital video

170   camera (Sony DCR-SX33) positioned in front of a chair, with question cards laid out on a table (Figure 1).

171   Decorative lighting and coloured screening created a more enjoyable and relaxed atmosphere.

172   (Figure 1 & Table 1)

173   Diary room questions were independently developed by four researchers, and were refined following

174   group discussions. The final questions (Table 1) were independently reviewed for quality and clarity by an

175   expert qualitative researcher. Questions were deliberately broad and open-ended to ensure participants were not

176   led to a particular answer and required more than a "yes/no" response (Smith, 2009). Responses were guided

177   towards students' perceptions of the course experience, as well as their personal development and perceived

178   benefits beyond the immediate group dynamics. There were three sets of questions, each corresponding to a

179   specific time point during the course. A warm-up question was used to relax participants and encourage a

180   greater depth in answers. Researchers viewed the initial entries for each time point to ensure the questions were

181   understood as intended; all entries were later included in the analysis as no such misunderstandings were

182   observed.

183

Procedure

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185   Students were invited in person by researchers to give entries. Purposive sampling was used to ensure

186   the deepest possible understanding of the experience (Hastie & Hay, 2012), whereby the researchers invited a

187   range of participants to represent the diversity observed within the wider population; for example, those who

188   displayed varied course experiences (e.g., enjoyment, success/failure), apparent personality types (e.g.,

189   extroversion and introversion), and demographics. Forty-six students were invited into the diary room, with six

190   (13%) declining to take part due to an unwillingness to be recorded. This refusal did not appear biased towards

191   students with any particular characteristics.

192   Each participant was given an information sheet, consent form, and demographic questionnaire. Before

193   being left alone in the room, participants were instructed to read each question aloud, take their time, answer in

194   as much depth as deemed necessary, and to leave out or revisit questions if needed. After making their entry,

195   participants were asked to inform the researcher if they were unhappy with their comments, or if they would like

196   to make any additions; neither event occurred.

Analysis

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198   Forty diary room entries were collected over four iterations of the course; 12 on arrival, 16 during, and

199   12 at the end of the course. The duration of entries ranged from 63 sec to 10 min 49 sec (M = 4 min 8 sec, SD =

200   2 min 21 sec), resulting in a total of 2 hr and 45 min of recording.

201   An inductive thematic analysis was used because of the exploratory nature of the study. This approach

202   provides a rich and descriptive account of patterns within the data set, with identified themes being strongly

203   linked to the data itself, rather than fitting to a pre-existing theory or framework (Braun & Clarke, 2006; Howitt,

204   2010). A semantic, realist approach was taken, whereby participants' experiences and personal meanings were

205   analysed using an explicit interpretation of what was said, rather than looking for underlying meanings and

206   structures (Braun & Clarke, 2006).

207   To increase systemisation and transparency, guidelines provided by Braun and Clarke (2006) and

208   Howitt (2010) were followed. Step 1 involved data familiarisation. Although professional transcription services

209   were used, the lead researcher watched, read, checked, and re-read all entries. In Step 2, initial coding was

210   carried out using qualitative analysis software (Nvivo 9). Each sentence, or small section of text, was given a

211   descriptive code one level of abstraction away from the data. No new codes were created in the final transcripts,

212   suggesting saturation was approached. Themes were identified as the process naturally evolved into Step 3,

213   involving the sorting of codes into themes. Tentative themes were further organised into higher and lower level

214 themes. In Step 4, themes were reviewed to ensure there was enough supporting data and both *internal*

215 *homogeneity* and *external heterogeneity* existed (Patton, 2003). This process resulted in themes being removed,

216 merged or divided. In Step 5, names and definitions were given to each theme. Theme names were selected

217 based on words from research, theory, and terms used by participants (Hastie & Glotova, 2012).

218 To improve credibility and trustworthiness, a second researcher independently coded 15% of the data,

219 before themes were discussed and refined until consensual validation was reached. Finally, the entire data set

220 was presented to two expert researchers who were independent of the analytic process; more refinements were

221 made at this stage before being agreed.

222 **Results**

223 The following results are organised into two distinct but related areas of interest - the *course*

224 *experience* (e.g., a collection of themes describing the process students went though during OAE) and the *course*

225 *outcomes* (e.g., a collection of themes describing the perceived learning outcomes that resulted from the

226 experience) (see additional online information for the full set of themes and definitions).

227 **The Course Experience**

228 Students described their feelings towards the course and their learning experiences in great depth. Five

229 first level themes were discussed, including students' preconceptions about the course, their expected course

230 outcomes, meaningful elements of the course, how they overcame challenges, and their affective and

231 instrumental attitudes towards the course. These five themes together comprised 21 second level themes and 52

232 third level themes (Table 2). In the following sections, sub-headings are used to identify each of the first level

233 themes and the associated second level themes (italicised) are described along with the third level themes and

234 examples of supporting quotes.

235 (Table 2)

236 **Individual preconceptions.** On arrival, students brought with them a number of different attitudes and

237 feelings towards their participation in the course. These preconceptions included different types of *motivation*

238 *for attending*. Some students attended simply because it was a compulsory part of their degree course, whereas

239 other students attended in preparation for future project work. Students displayed *positive affect* by conveying

240 excitement towards the course. However, students had mixed *preferences for groupwork,* with some responding

241 positively and others stating a preference for independent working. Students had received prior *information from*

242 *peers* that influenced their preconceptions, including what to expect from the activities. Some had previous

243 experiences of OAE: "I've done something similar to this in school... I'm pretty sure I know what's going on

244 and what sort of tasks we'll be doing.", whilst others had none. Students also expressed *concerns* relating to

245 personal safety, the environment, physical exertion, being amongst others and a lack of pre-course information.

246 For example, "My main concern would be whether I get on with my team mates because if I didn't, I'd find it

247 quite a hard, hard couple of days." Other students had no concerns.

248   **Outcome expectations.** Students expectations ranged from high, "We have got a lot to learn on this

249 course," to low, "To be honest I don't think I'll learn much". Many expected to develop *groupwork skills,* such

250 as cooperation, leadership and communication. Students also expected the course to provide *enjoyment*, and lead

251 to *improved peer relationships*. Finally, the course was expected to *benefit future behaviour*, at university and in

252 future employment.

253   **Key elements of the experience.** During the course, students repeatedly discussed elements of the

254 experience that stood out to them as being particularly meaningful and/or contributing to the course outcomes.

255 The activities themselves were often described as *interesting and enjoyable. Challenging* elements of the

256 experience were reflected in five third level themes: (a) physically demanding, (b) intellectually demanding, (c)

257 language barriers, (d) frustrating, and (e) sometimes unachievable, allowing teams to experience failure.

258   Another key element of the experience described how activities *revealed weaknesses*, both individually

259 (e.g., "...it was a bit slow, but that was due to two or three people not being particularly confident.") and as a

260 group (e.g., "...no one was really listening to each other"). A fourth key element was the *environment*; some

261 found the novelty memorable and others described a sense of risk, which was exciting and helped to foster a

262 supportive group environment as this student explains:

263   The prospect of falling with a harness on you... Individuals would have to be looked after by the rest of

264   the team, which was good because you have to rely on your team mates to actually stop you from

265   falling.

266 The environment also provided natural consequences, for example, "...we think and make a boat, but it doesn't

267 work, it didn't work because we didn't work well and we didn't think well so we fall in the sea".

268   The final element of the course experience was the contribution of *time outside of activities.* This

269 student explains the importance of having duty rotas:

270   If we were not given a duty rota or anything, the place would rapidly descend into just rubbish and

271   chaos… it is good to start thinking about what is necessary in a business or an environment like that in

272   order to keep things running smoothly…

273   Whilst another student illustrates the importance of free-time outside of structured activities, "I think the most

274   meaningful experience has been last night's social... the whole of our team went along. We all had a really good

275   laugh just sharing experiences…"

276   **Overcoming the challenge.** To overcome challenges posed by the course, students used interpersonal

277   and intrapersonal coping methods. *Interpersonal support* was gained from interacting with others and comprised

278   seven third level themes: (a) groupwork (e.g., "My teammates, they are quite skilled in these kinds of things

279   [outdoor pursuit activities]... I learned a lot from them"), (b) leadership (e.g., "Because I have done [raft

280   building] before I proposed idea and we went with it and it worked really well"), (c) communication (e.g., "We

281   did take it in turns to, to voice opinions and ideas in order to overcome each obstacle"), (d) role allocation (e.g.,

282   "We chose people who maybe had much better balance to carry the water[1] and the other two to support."), (e)

283   trust (e.g., "You are blind folded and you have to trust the other team member to climb up the wall."), (f)

284   humour (e.g., "A bit of humour has certainly helped me to overcome a few things."), and (g) instructor support

285   (e.g., "The people that are taking us are really, really friendly, really helpful, quite insightful about stuff. They

286   realise where certain weakness are and strengths are in the group").

287   *Intrapersonal support,* was gained from within the self and comprised five third level themes: (a)

288   application of previous knowledge (e.g., "Some of my sailing knowledge about knots came in handy."), (b)

289   emotional control (e.g., "...I have had to keep my head cool."), (c) improvisation (e.g., "Improvisation happened

290   quite often, especially because we were trying to do things quickly..."), (d*)* reflection (e.g., "Reflection upon

291   how things have gone in the past have helped me to look to difficulties in the future..."), and (e) planning (e.g.,

292   "Trying to kind of foresee difficulties and overcoming them before they get to them").

293   **Reflection on the experience.** On the final day, students reflected on the course as a whole. Many felt

294   they had a *positive and memorable experience*, represented by quotes such as, "It was a good experience and

295   memories will stay forever." and, "Well, in a nut shell, the best experience of my life". The experience also

296   *exceeded expectations* (e.g., "Honestly I thought it was going to be an inconvenience but, I liked it... it was

297   good") and provided a *sense of achievement* (e.g., ...we got out there and it worked... that was really great to see.

298   I really, really enjoyed that). Finally, the end of course feelings included *thoughts on transfer,* with students

299   anticipating how the experience might be useful in the future, "...I'm in a group with these people and if nothing

300   else, I have a project to do with them in March." and, "It is good to start thinking about what is necessary in a

301   business".

302   _____

303   [1] In one activity, students were required to carry containers of water across an obstacle course without spilling.

304   **The Course Outcomes**

305   Students discussed a broad range of outcomes as a result of attending the course. The analysis revealed

306   23 third level themes, which were categorised into seven second level themes, and further categorised into two

307   first level themes of *interpersonal* and *intrapersonal* outcomes (Table 3). The following sections describe the

308   interpersonal and intrapersonal outcomes in turn, with their corresponding second level themes italicised.

309   (Table 3)

310   **Interpersonal.** Interpersonal outcomes involve how an individual interacts with others. This first level

311   theme included three second level themes: *groupwork*, *improved relationships* and *internationalisation*. By the

312   end of the course, students displayed an increased awareness of the value of *groupwork* and reported developing

313   seven different *groupwork* skills: (a) communication, which involved an increase in communication skills (e.g.,

314   "Number one definitely, it improves my teamwork, my communication skills with other people"), listening

315   skills (e.g., "I learnt to listen to others, not always listen to myself.") and students' understanding of the

316   importance of effective communication, for example:

317   It has become very clear that some people do not like to voice their opinions... I think a team does need

318   people like that so that they can come up with the ideas but they still need someone to put them across.

319   (b) leadership skills, which included having a better understanding of the qualities associated with a successful

320   leader (e.g., "You are more likely to work for somebody if you are enjoying their company..."), and developing

321   one's leadership style (e.g., "I feel that I can be a bit overbearing..."); (c) team spirit, with students expressing

322   that they learnt how to foster a supportive team environment through trust, self-sacrifice and motivating others;

323   (d) group reflection, comprising an increased ability to reflect 'in action', where it was "useful to step back and

324   look at a situation sometimes", as well as reflecting 'on action', for example, "...being able to reflect on what

325   we've done, brainstorm what would have been better"; (e) understanding of team roles, with one student

326   learning that "...every organisation is a special structure, just like a successful group needs some leaders and

327   thinkers and doers, as well as the carers"; (f) cooperation, involving the ability to compromise and work with

328   others cohesively. One student stated "[the course] taught me to be a bit more accepting, understanding sort of

329   like appreciating what other people's views are", whereas another learnt "... not to undervalue anyone"; and (g)

330   functioning of intact groups, which describes the perceived benefits to groups who were returning to university

331   to continue working together.

332   Students described *improved relationships*, which included peer group relationships, where new

333   friendships were developed between students; one student said, "Before coming here, I had about ten friends,

334 twelve friends from the school. Now I almost know everyone by name", whilst another described increased

335 social support, "I meet some new friends. When I'm in school, I meet some difficulties or problems, I can ask

336 them for help". Improved relationships also included those between student and staff, where one student said,

337 "They really care for us and are here to help us... Our relationship was just entering the lecture, taking some

338 information, getting out. Now I know them personally, they are very good guys".

339   The final second level theme within the interpersonal outcomes was *internationalisation*, defined as

340 promoting, valuing and learning to work effectively in multicultural environments. This theme benefitted home

341 and international students alike and included internationalising groupwork, involving a change in cultural beliefs

342 and norms regarding groupwork. An overseas student explained, "In China I usually have fewer time, or fewer

343 chance to cooperate with others. We usually study by ourselves... I have found that teamwork is very

344 important". Other third level themes included overcoming multilingual challenges and increased cross-cultural

345 integration; this student spoke of both:

346   There is some people on this course that have been in every lecture I have sat in for two years that I have

347   never heard them utter a single syllable and I don't really know if they speak English. And in the last two

348   days I have had to get them to communicate with me somehow and some of their English is really poor

349   but, I've had to make it work... I think there is segregation in our year and it's wrong and it would be nice

350   to break it down a bit more.

351   **Intrapersonal.** Students reported a range of intrapersonal outcomes, which were defined as outcomes to

352 do with the self. This first level theme included four second level themes: *mental toughness*, *task management*

353 *skills*, *self-awareness* and *physical activity*. Within the theme *mental toughness*, students spoke of an increased

354 capacity to deal with challenges, including (a) persistence in the face of difficulty (e.g., "I learnt to never give

355 up. I know no matter what happens in academic work also in life and maybe work in future, we will meet a lot

356 of difficulties but to make sure we never give up"); (b) increased self-confidence (e.g., "I become more

357 confident about myself. I usually speak to myself that you can do it... because you have the ability"); (c)

358 learning to be brave despite low self-confidence (e.g., "There is just one girl in our team... if I can't do it our

359 team will fail... So I think being brave is the most important thing I learnt"); and (d) adaptability, (e.g., "We

360 should be adaptable to any situation").

361   Increased *task management skills* included improved planning skills and understanding of the importance

362 of planning. One student said, "We just dived into challenges... we did not use planning time efficiently, so,

363 don't be afraid to use all the time and all the resources you have got". Students also developed problem-solving

364   (e.g., "I learnt how to think by myself and use my knowledge in practice to solve my problem."), and time

365   management skills (e.g., "...time management... really struck through... It taught us to keep an eye on the time").

366   The next intrapersonal outcome was increased *self-awareness*, where students became more aware of their

367   own strengths and weaknesses and highlighted areas requiring continued improvement. For example, "I find it

368   very difficult not to snap at people... I wasn't aware of that... Probably rein that in a bit" and, "I don't listen to

369   anyone, I just do what I am thinking".

370   Finally, intrapersonal outcomes included benefits to *physical activity*. The course provided an immediate

371   bout of exercise, with some students having gone "a long time without exercise", as well as teaching outdoor

372   recreation skills such as personal survival, knots and map reading. Students also reported an increased

373   motivation to take part in new sports, for example, "I really liked it, maybe I will continue the rowing in the

374   future" and to increase future physical activity; for example, "I think after I go back from [the course] I will not

375   be lazy anymore".

376   **Discussion**

377   The aim of the study was to investigate students' learning experiences during a 3 day outdoor-centred

378   groupwork skills course. The depth of student response to the semi-structured video diary room revealed a

379   complex range of themes. Divided into two separate thematic maps, students discussed the learning process they

380   experienced during OAE (*the course experience*) as well as the range of outcomes resulting from their

381   experience (*the course outcomes*). The following discussion is organised around each of the resulting themes in

382   turn.

383   To begin with, students arrived at the centre with varied motivations for attending; some valued

384   groupwork and hoped to develop their interpersonal skills, whilst others were unsure why they were attending

385   and displayed negative attitudes towards groupwork. This variation may be because the course is embedded into

386   the degree course, rather than an optional addition. Whilst some students expected to develop groupwork skills,

387   many saw the course as a social event. Overall, the range of expected course outcomes on arrival, were far

388   narrower than the subsequent outcomes described in later entries. This disparity could represent an 'unconscious

389   incompetence' state in many students, which is described in the conscious competence learning model as being

390   unaware of a lack of knowledge or expertise within a given area (Adams, 2012; Flower, 1999). Despite the

391   engineering discipline placing a particularly high demand on the development of groupwork skills in graduates,

392   many students were unaware of the different areas of interpersonal and emotional development considered

393   important in higher education and employment (Athiyaman, 2001; Bennett, 2002; Branine, 2008; Prichard et al.,

394   2006). By the end of the course however, students appeared to have progressed to the 'conscious incompetence'

395   and 'conscious competence' stages of the learning model, displaying greater awareness of areas in need of

396   improvement as well as increased competence in these areas. This finding supports the argument that students'

397   ability to work well in groups is not effectively developed without direct intervention (Prichard et al., 2006), as

398   students appear to have a superficial knowledge of the different interpersonal skills that could be improved. In

399   addition, this finding suggests that the outcomes of OAE discovered in engineering students, may generalise to

400   other disciplines. In a discipline that places less emphasis on the importance of groupwork skills, students would

401   still be likely to begin OAE with similar beliefs and understanding to those in the present study. However,

402   further research should include other disciplines to confirm this expectation.

403   This pre-course lack of awareness and negative attitude towards groupwork is also an important area

404   for course improvement. Students' pre-course attitudes towards groupwork have previously been found to

405   significantly relate to post-course measures of perceived group effectiveness, supportiveness, and continuation

406   of groupwork when returning to university (Shivers-Blackwell, 2004). Further, according to behavioural change

407   theories such as the theory of planned behaviour (Ajzen, 1991), the likelihood of an individual changing a

408   behaviour (e.g., groupwork) is predicted by the individuals' intention to change this behaviour. Intention is in

409   turn predicted by attitude, perceived social norms, and perceived behavioural control over the behaviour.

410   Therefore, the development of behavioural skills could be enhanced by targeting these areas prior to students

411   attending a course.

412   Other key areas of the experience were the activities, which students found interesting and enjoyable,

413   yet challenging, revealing individual and group weaknesses. Students were motivated by perceived risk and

414   natural consequences to failure, resulting from the outdoor environment. These findings support previous studies

415   where participants have recalled the unfamiliar and challenging outdoor environment as a vital part of the

416   learning experience (D'Amato & Krasny, 2011; McKenzie, 2003). It is believed that this type of environment

417   provides optimal levels of arousal for learning to occur, as students are alert and engaged (Priest & Gass, 2005).

418   The environment also promotes transformative learning, encouraging students to think about things in a

419   different way and seek support from those around them (Mezirow, 2000; O'Sullivan, 2002). In the present

420   study, the challenges faced required students to work together and utilise a range of coping methods, many of

421   which were reflected in the subsequent learning outcomes.

422   In addition to the activities, time outside of activities was also found to be important. Some students

423   found the house keeping rotas and living arrangements just as effective in developing groupwork skills as the

424   activities themselves. The free-time was also important for socialising and bonding, allowing students to

425   practice their interpersonal skills and explore new social networks. This finding is particularly interesting as

426   some researchers have suggested that to save travel costs, group problem-solving courses could be conducted

427   indoors on campus and achieve similar outcomes (Broderick & Pearce, 2001). However, this study highlights

428   the importance of a novel and unpredictable outdoor environment and the time spent living and socialising

429   together outside of the structured activities. To maximise the social benefits, organisers should be encouraged to

430   randomly assign students both to their small groups and to different iterations of a course, rather than allowing

431   students to sign up in friendship groups.

432   Students reported developing key skills, such as adaptability, communication, groupwork, leadership,

433   self-confidence, persistence, time management, problem-solving and planning, all of which appear repeatedly in

434   the literature as crucial for both success in higher education and subsequent employment (Bennett, 2002;

435   Prichard et al., 2006; Roberts, 2009; Stevens & Campion, 1994). Not only did students report developing their

436   ability across these areas, many demonstrated increased awareness of what effective groupwork involves and the

437   value in working with others. Although some of these outcomes have been found in previous literature (for

438   reviews, see Ewert & McAvoy, 2000; Gillis & Speelman, 2008; Hattie et al., 1997; Williams, Graham, & Baker,

439   2003), this study is the first to demonstrate such a range of outcomes following a short, outdoor-centred course

440   used in higher education.

441   Another interesting outcome was internationalisation, where students learnt to work in

442   multicultural groups and overcome the associated language barriers. This development is vital in an increasingly

443   globalised economy, with workplaces requiring graduates who can navigate language and cultural differences

444   and work effectively in multicultural groups (Roberts, 2009). This study is the first to demonstrate the potential

445   for OAE in providing this type of development. Future research should further explore these multicultural

446   benefits, including whether outcomes persist on return to university, and whether different nationalities or

447   cultural groups experience and benefit from OAE in different ways.

448   In summary, this study provides support for OAE in higher education, demonstrating a wide range of

449   positive outcomes, achieved during a short outdoor-centred course. In addition, the groupwork skills developed

450   were not specific to the intact groups taking part and instead demonstrate individual development that may

451   benefit students when entering various group environments. However, while this study outlines a range of

452   outcomes that may potentially transfer to future experiences, further research is required to explore the long-

453   term impact on student development and employment.

454   As a secondary objective, this study developed a qualitative method of data collection that successfully

455   captured students learning experiences whilst immersed in a course. Students were willing to participate and

456   appeared comfortable when providing open and in-depth responses. The varied responses indicated that the

457   questions enabled students to discuss their experience openly, whilst ensuring data remained rich and focused on

458   the research question. This semi-structured method extends previous unstructured diary room methodologies

459   (e.g., Buchwald et al., 2009; Noyes, 2004), as a more efficient method of data collection and analysis, as well as

460   demonstrating its effectiveness when used in higher education.

461   The semi-structured video diary room also adheres to recommendations commonly suggested for

462   improving the quality of traditional interview techniques. For example, Hastie and Hay (2012) recommend that

463   interviewers would benefit from listening more and talking less, being more tolerant of silences (allowing the

464   participant time to think), making fewer unnecessary interruptions, and avoiding judgemental reactions. The

465   space and time students were given to consider the questions may have also acted as an additional learning aid,

466   encouraging reflective learning. However, a limitation of the interviewee being alone was an inability to follow-

467   up answers that required clarification or further probing. To overcome this limitation, diary room questions must

468   be carefully worded to avoid any possible misinterpretations and entries could be followed up using face to face

469   interviewing.

470   Further research should validate the semi-structured video diary room in different settings. Follow-up

471   interviews could be used to discover how participants found using a diary room and the impact this method may

472   have on their learning experience. Further, a semi-structured video diary room could be implemented in a case

473   study design to assess skill transfer, where an individual's learning experience is followed before, during and

474   after a training course.

475   Overall, this study has demonstrated that outdoor-centred courses offer a unique environment for

476   students to develop interpersonal and intrapersonal skills. The range of course outcomes displayed provides a

477   valuable base for future research into the quantification of these outcomes, the influence of individual

478   differences, and the issue of long-term transfer. In doing so, this study has also developed a novel qualitative

479   method. Whilst requiring further validation, the semi-structured video diary room has been shown to be highly

480   effective in collecting rich and informative data.

481

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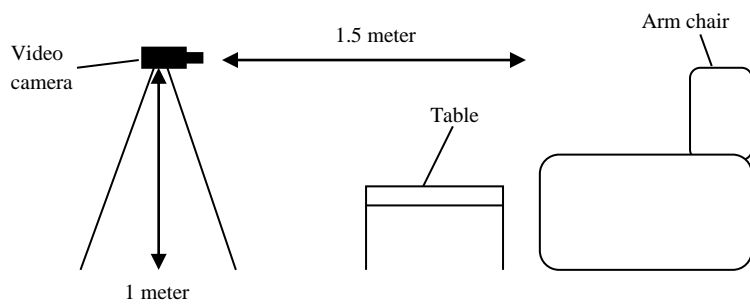
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582   Video
       camera

       1.5 meter

       Arm chair

583

       Table

584

585   1 meter

586   **Fig. 1** The layout of the semi-structured video diary room

587

588

589   Table 1

590   *Semi-structured video diary room questions*

Time point	Question
On arrival	*Tell us a bit about yourself (your name, where you're from, what you like doing, why you're here)*
	What do you hope to learn on the course?
	Do you have any concerns about the course?
During day 2	*Tell us a bit about your day (what you've been doing)*
	What have you learnt so far on the course?
	What has been your most meaningful experience here so far?
	What things have helped you to overcome any difficulties?
End of day 3	*Tell us a bit about your experience at [the outdoor pursuits centre]*
	What have you learnt about yourself?
	What have you learnt that you could use during your academic work or future employment?
	What was your greatest achievement?
	What do you feel you will take away from this experience?

591   *Note*. Warm-up questions indicated in italics

592

593   Table 2

594   *A thematic analysis of the groupwork skills course experience*

First level themes	Second level themes	Third level themes
Individual preconceptions	Motivation for attending	Compulsory
		Preparation for future academic work
		Improving groupwork skills
	Positive affect	Positive affect
	Preferences for groupwork	Enjoys groupwork
		Preference for independent learning
	Information from peers	What to expect
		Positive views
	Past experiences	Previous experience
		No previous experience
	Concerns	Personal safety
		Environment
		Physical exertion
		Being amongst others
		Lack of pre-course information
		No concerns
Outcome expectations	Groupwork skills	Cooperation
		Leadership
		Communication
	Enjoyment	Enjoyment
	Improved peer relationships	Improved peer relationships
	Benefit to future behaviour	University
		Employment
Key elements of the experience	Interesting and enjoyable activities	Interesting and enjoyable activities
	Challenging	Physically demanding
		Intellectually demanding
		Language barriers
		Frustrating
		Sometimes unachievable
	Revealed weaknesses	Individual weaknesses
		Group weaknesses
	Environment	Novel
		Perceived risk
		Natural consequences
	Time outside of activities	Duty rotas
		Free-time
Overcoming the challenge	Interpersonal support	Groupwork
		Leadership
		Communication
		Role allocation
		Trust
		Humour
		Instructor support
	Intrapersonal support	Application of previous knowledge
		Emotional control
		Improvisation
		Reflection
		Planning
Reflection on the experience	Positive and memorable	Positive and memorable
	Exceeded expectations	Exceeded expectations
	Sense of achievement	Sense of achievement
	Thoughts on transfer	Thoughts on transfer

595   *Note*. See the *online supplementary materials* for a more detailed thematic map including definitions and
596   example quotes

597

598

599   Table 3

600   *A thematic analysis of the groupwork skills course outcomes*

First level themes	Second level themes	Third level themes
Interpersonal	Groupwork	Communication
		Leadership
		Team spirit
		Group reflection
		Team roles
		Cooperation
		Functioning of intact groups
	Improved relationships	Peer group
		Student and staff
	Internationalisation	Internationalising groupwork
		Overcoming multilingual challenges
		Reduced cultural divide
Intrapersonal	Mental toughness	Persistence
		Self-confidence
		Bravery
		Adaptability
	Task management skills	Planning
		Problem-solving
		Time management
	Self-awareness	Self-awareness
	Physical activity	Exercise
		Outdoor recreation skills
		Motivation

601   *Note*. See the *online supplementary materials* for a more detailed thematic map including definitions and
602   example quotes

603