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Electronic [re]constitution of groups: Group dynamics from face-to-face to an online setting

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Abstract The authors work as online tutors for a BSc (Hons) physiotherapy programme at 12Coventry University in the United Kingdom. This paper represents a stage in our 13developing understanding, over a 3 year period, of the impact of group dynamics on online 14 interaction among physiotherapy students engaged in sharing with their peers their first 15experiences of clinical practice. The literature exploring online interaction tends to situate 16meaning either in theories borrowed from conventional face-to-face interaction or on virtual 17interaction. Research focusing on 'blended learning' that combines face-to-face and online 18 interaction is limited in terms of considering how group dynamics impact groups that are 19constituted and reconstituted in the two very different learning contexts. Using a case study 20approach, the authors consider how group dynamics change as groups move from face-21to-face to online collaboration in pursuit of learning objectives. We character typical features 22of the cases and draw conclusions based on similarities and differences. Findings suggest that 23group learning is linked to group cohesion, which appears to be mediated by social and 24cognitive factors students bring with them. Social presence appears vital to positive group 25dynamics and is a precursor to cognitive presence, which develops when groups rise above 26their desire to be sociable and supportive. Group dynamics, whether positive or negative, and 27their consequent impact on interaction appear to be relatively stable across contexts once the 28group scene is set through face-to-face interaction. Engagement and interaction of individual 29students, however, can alter when face-to-face interaction moves online. 30

Keywords Group dynamics · Online discussion forums · Blended learning

Introduction

Groups generally function to achieve a task, build and maintain the group and develop 34 individuals within the group (Adair, 1986). Group dynamics, or changes in the group over 35

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time, influence how well it functions to fulfil these aims. The potential for collaborative 36 learning within groups in higher education is well recognized and is traditionally exploited 37 through face-to-face, and more recently online, interaction. Despite a growing body of 38research and literature that elucidates how group dynamics might impact learning within 39online groups, there appears to be a gap in the literature in understanding how group 40dynamics might change as a group moves from face-to-face to online interaction, as occurs 41 within programs utilizing a blended learning approach. Understanding how students interact 42and how groups develop online is important (Beuchot & Bullen, 2005), yet provides only a 43partial understanding in a blended context. 44

Blended learning can take different forms, which frequently include synchronous or 45asynchronous online discussion forums (Harasim, 2000). Combining face-to-face and 46online discussion in a university context has been found to provide a superior learning 47environment compared to traditional classroom interaction alone (Althaus, 1997). There 48appears, however, to be limited understanding of the dynamics of online discussions in the 49context of programs involving lengthy work-based placements. Two studies that have been 50conducted in social work (Quinney, 2005) and occupational therapy education (Wooster, 512004) suggest that there are potential benefits. Notwithstanding an interest in potential 52benefits, our own study was concerned primarily with understanding the processes at work, 53which could potentially apply to other student groups. Therefore, in an attempt to link 54group dynamics to learning potential and outcomes, our own research explored: (1) how 55group dynamics impact online interaction; (2) whether interaction changes when the 56medium shifts from face-to-face to online contact; (3) how to optimize support for online 57collaboration. 58

Background theory and empirical evidence

Literature on conventional face-to-face interaction in groups, group dynamics, learning in 60 small groups and learning communities is extensive. Alpay (2005) provides a good 61 overview of what we know about the dynamics of conventional face-to-face interactions, 62albeit largely drawn from psychodynamic theory, and applies this to online interaction to 63 suggest ways of encouraging and enhancing interaction. Socio-biological theories of group 64 processes also have considerable explanatory potential. For example, Caporel and Brewer 65(1991) highlight how, as human beings who evolved in the context of group living, we need 66 to belong to social groups. This need is met more through groups that have high levels of 67 personal interaction (Baumeister & Leary, 1995). Interpersonal attraction between 68 individuals influences group cohesion (Hogg, 1992), which is characterized by commitment 69 and showing an interest in one another (Tubbs & Moss, 2003), further enriching interaction 70(Murphy, 2004). 71

Two well-known theories help to explain why groups might cohere. The first, "social 72comparison theory" (Festinger, 1954) stresses the role of pre-existing similarities in 73attitudes and values between people in groups. People tend to affiliate with those relatively 74similar to themselves, on whom they rely for comparison in order to validate their own 75opinions, attitudes and beliefs. The similarity of others affirms their own views, increasing 76their confidence in attitudes and behaviors (Hogg, 1992). The second theory, "social 77 exchange theory," emphasises cost-benefit aspects of social relations. Interactions are 78considered in terms of rewards and costs to the individual (Thibaut & Kelley, 1959) and, 79unsurprisingly, individuals strive to maximise their rewards and to minimise their costs 80 (Forsyth, 1999). Group cohesiveness will be greater where the rewards of belonging to the 81 Computer-Supported Collaborative Learning

group outweigh the costs. The notion of "reciprocal altruism" explains the development of 82 co-operative relationships within groups where an individual may help someone if that 83 person can be expected to reciprocate in the future (Spoor & Kelly, 2004). 84

The development of shared mood and emotion within groups has attracted recent interest 85 (Spoor & Kelly, 2004) and has implications for group dynamics online as well as in face-86 to-face groups. Although Alpay (2005) argues that online discussion forums limit the 87 expression of emotion, it is well recognized that there are distinct socio-emotional 88 dimensions to all channels of communication (Tanner, 2005) and that online interaction is 89 no exception (see for example, Rovai, 2002; Seepersad, 2004; Walther, 1992). Moods and 90 emotions are generally experienced as either affectively positive or negative and have 91associated behavioral expressions and levels of physiological arousal. Positive emotions 92might foster cooperation between individuals. Negative moods and emotions that signal some 93 type of threat, however, stimulate behaviors to negate the threat, such as hostility. "Emotional 94contagion" occurs when the moods and emotions of one individual are transferred to others, 95evident in automatic and unconscious mimicry and synchronization of emotional behavior 96 within the group known as "interaction synchrony" (Spoor & Kelly, 2004). 97

The social psychological theories above, although helpful in highlighting factors that 98influence group interaction, are generic theories that fail to connect the social and emotional 99 climate in groups with learning potential. They also focus exclusively on face-to-face 100interaction. The literature on computer-supported collaborative learning does connect the 101 social and emotional climate in groups with learning potential, as well as demonstrating 102increasing understanding of the social and psychological factors influencing online interaction 103(Cramphorn, 2004; Davis & Denning, 2000; McConnell, 2005; Oren, Mioduser, & 104 Nachmias, 2002; Salmon, 2000; Wegerif, 1998), but most of this work focuses exclusively 105on virtual interaction. 106

In a virtual context, Beuchot and Bullen (2005) explore interaction and inter-personality 107 in online discussion forums and highlight the importance of establishing "social presence" 108 online prior to asking students to engage in cognitive tasks. The term "social presence," 109which can refer to the properties of a medium that influence social cues and, therefore, 110interaction (Short, Williams, & Christie, 1976) is used by Garrison, Anderson, and Archer 111 (2000, p. 94) to refer to "the ability of participants in a community to project themselves 112socially and emotionally" within their community. Beuchot and Bullen (2005) suggest that 113social presence is a necessary precursor to "cognitive presence" or intellectual engagement. 114This link is also supported by Salmon (2000), who associates superficial exchanges with 115online socialization and information exchange that can progress to joint knowledge 116construction and development as group interactivity increases. However, Salmon identifies 117 the online moderator as a significant influence in moving students to more advanced levels 118 of cognition. 119

The interplay between learning and group dynamics is also evident in a large 120comparative study of community formation and cohesion in asynchronous learning 121networks and traditional courses, which highlights the centrality of social and emotional 122factors to group cohesion (Rovai, 2002). Finding no significant difference between virtual 123and face-to-face groups, Rovai highlights the importance of spirit, trust, interaction and 124learning. He conceptualizes spirit as being recognition, friendship and bonding between 125members. Trust involves credibility and benevolence, such that members care about and 126can rely on one another and help one another in their learning. Learners are able to expose 127gaps in their learning, knowing that others will support (and not ridicule) them. Interaction 128may be directed toward the assigned task and/or towards social exchanges, while learning is 129the commitment to a common educational purpose. 130

It is by synthesizing the preceding social psychological theories and empirical work with 131that of Davis and Denning (2000) that we have come to understand the complexities of, and 132influences on, group dynamics and how they impact learning in a blended learning context. 133Davis and Denning's research was conducted in a virtual group context with post-graduate 134students, in which they identified characteristics associated with successful collaborations 135or learning communities. They separate these characteristics into "group dynamics" and 136"learning dynamics." Positive group dynamics are characterized by risk taking, facing 137rather than avoiding conflict, social activity, humor, expressing interest, reflection, and 138feedback/disclosure. Learning dynamics incorporate the mechanisms through which 139learning might be promoted, such as the building or scaffolding of ideas, challenging, 140experimenting, meta-communication, and reflection. Davis and Denning synthesize group 141 and learning dynamics to form a grid based on levels of activity in these domains. Using a 142continuum from low to high on both axes of the grid, they identify the extent to which 143group and learning dynamics interact to constitute a learning community and offer vignettes 144of how groups might perform differentially (Fig. 1). 145

The distinction between group and learning dynamics is particularly useful in our 146 context because it highlights differences between groups in terms of the social and 147 emotional climate evident in both face-to-face and online interaction (group dynamics), and 148 the ways in which thinking, reasoning and reflection are used within groups to stimulate 149 increased understanding (learning dynamics). Notwithstanding some limitations in the 150 model with respect to our own findings, which are explored presently, it seemed to offer a 151

High	I'm OK, you're OK	Tough love				
	High on learning dynamics, low on	Groups who manage both group and				
Î	group dynamics.	learning dynamics get as close as				
	Members show little concern for each	possible to being a learning				
	other personally and will tend to work	community. Characterized by hard				
	independently rather than	work, collaboration but possibly				
Learning	interdependently	anxiety.				
Dynamics						
(building	Fragmented by technologies	Summer Holiday				
ideas,	Being low on both group and learning	High on group dynamics but low on				
reflecting etc)	dynamics may have very little activity	learning dynamics may mean that this				
↑	Characterized by indifference, not	group has fun but achieves little				
	concerned with the group process and	learning.				
	ineffective in its learning objectives					
Low						
	Low Group Dynam	Group Dynamics High				
	(risk-taking, facing conflict, social activity, humour, expressing interest etc)					

Fig. 1 Adapted from Davis and Denning's (2000) learning community grid

tentative organizing framework for analysis. We do acknowledge that our participants 152 differed from those in Davis and Denning's study in that they were undergraduate, rather 153 than postgraduate, students in a blended, rather than virtual, learning environment. 154

Research context

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The total cohort within the BSc (Hons) physiotherapy program is large (n=131), although 156interactive and practical work is conducted in seminar groups of approximately 20 students. 157The relative intimacy of the seminar groups allows students to get to know one another 158well. A blended learning approach offers an ideal way of facilitating and supporting student 159healthcare professionals in making the transition to the practice setting for the first time. 160The students spend the first 18 months of the program in the University, and in close 161proximity to peers, developing the necessary knowledge and skills to prepare them for 162practice. This is followed by a 15-week period of practice-based learning, during which the 163students are dispersed across an extensive geographical area, often in isolation from their 164peers. It is well known that the step into clinical practice is highly stressful for healthcare 165students (Di Giacomo & Adamson, 2001) and there is potential for isolation. Therefore, any 166intervention that alleviates stress that has been found to be supportive, such as online 167contact with peers (Clouder & Deepwell, 2004), can only be of benefit. 168

Once out in practice, each seminar group had access to an online social forum and an 169online critical incident forum. Both forums were private to the group. Each group was 170facilitated by one of the team of online tutors, who were allocated to groups with which 171they were most familiar. Each group set its own ground rules for the online forums. 172Notwithstanding the benefits of social contact with peers provided by a social forum, in 173pedagogical terms the aim of the critical incident forums was to provide a learning 174opportunity that enhanced reflection on practice through "social negotiation or collaborative 175sense-making, mentoring and joint knowledge construction" (Zhu, 1998, p. 234). The 176students were asked to post critical incidents or significant events in the critical incident 177forums. Brookfield (1990) suggests that critical incident technique provides a means of 178exploring experiences and the inherent assumptions that we bring to those experiences. 179Therefore, we adopted it as a means of structuring collaborative critical reflection around 180the challenging experiences confronting students in practice. Although postings were not 181 formally assessed, students were asked to reference ideas generated online in their module 182course work, which involved writing a reflective account of three critical incidents they 183encountered on their placement. 184

Research approach

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An action research approach was adopted over the discussion forums' 3-year period of 186operation. The main objectives for the use of this approach were to optimize the learning 187 potential for students and develop our facilitator skills through an iterative process that 188allowed for change. Action research, which has been termed a "vehicle for learning" 189(Coghlan & Brannick, 2005), is based on a cycle of action and reflection (Revans, 1998) 190that involves planning, taking action, evaluating the action and further planning in response 191to findings. One of the distinguishing criterions of action research, therefore, is 192improvement (Breakwell, Hammond, Fife-Schaw, & Smith, 2006), so it seemed an ideal 193means of ensuring rigorous evaluation and scope for further iterations of a learning strategy 194

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to which we were all relatively new. Changes that were made following evaluation include 195leaving discussion threads open for the full 15-week period whereas previously they were 196locked at the end of each of the three placements that comprised the 15-week block. 197Although some threads became quite long, locking them had the effect of stopping 198interaction and starting afresh, which some students found inhibiting. In addition, by 199increasing our emphasis on the introduction of the forums, ensuring students could access 200them and post and thread messages prior to leaving the university, we improved 201participation in the second cohort. Finally, rethinking facilitator input as the forums began 202to gain momentum allowed us to renegotiate teaching hours. 203

Data is comprised of the discussion threads of the six seminar groups, transcripts of 204focus groups conducted with each group at the end of the 15-week period, and written 205student evaluations. Each online tutor analyzed the discussion thread transcript for their 206group, developing conceptual categories related to student interaction and learning 207dynamics, most specifically looking for evidence of collaboration in building on ideas, 208critical engagement and reflection. We then shared analyses of our groups' discussion 209threads, written evaluations and focus group transcripts. Working together, we identified 210different emphases on issues and clustered categories into themes, which were then linked 211 with relevant literature. 212

A case study format is adopted as a means of highlighting the spectrum of differences 213 between groups. We acknowledge that our findings are grounded in a particularly novel 214 context and are therefore are not generalizable. However, it seems likely that they are 215 transferable to other blended learning situations. Groups have been given numerical 216 identifiers to ensure anonymity. 217

Reflections on findings

Rich learning

Biggs (1999) points out how no two groups of learners are the same, which certainly 220reflects our experiences. However, of the six groups studied, Groups 1 and 2 were 221 remarkably similar in that they appeared to be cohesive, exhibiting positive group dynamics 222characterized by commitment, clearly liking and showing an interest in one another (Tubbs 223& Moss, 2003). For example, Group 1 demonstrated commitment and interest not only by 224the quality of their interactions but also by the volume, i.e., 275 separate postings and 4–10 225responses for each of the 25 specific incidents described (of note is that all group members 226contributed bar one, who subsequently left the course). 227

Both groups had developed very sociable and supportive relationships while in the 228University setting and appeared to actively want to maintain the groups as a social entity 229while on clinical placement. Interactions, via the discussion forums, display a nurturing 230approach to their learning focused on their critical incidents. The conditions necessary for 231effective group interaction-social activity, humor, and expression of interest in one 232another's experiences as well as willingness to disclose and receive feedback (Davis & 233Denning, 2000)—were apparent in discussion threads, as the following exchange illustrates. 234Student 1 begins: 235

Hi everyone, Hope you are well and enjoying your two weeks off and I hope your236placements have gone well so far! I'm trying desperately hard to motivate myself to237write my critical incidents, so any help would be much appreciated...238

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The student goes on to describe a critical incident and her interpretation of it, and asks240some questions of her peers. Student 2 responds by first validating the idea, an important241aspect of social comparison (Festinger, 1954):242

I can identify with you... I also found it quite strange... Maybe it is to do with the fact 243 that...But it might also be to do with... PS will miss you, see you in June. 244

However, this student develops the idea further and opens up other possibilities showing 246 a readiness to share and question tentative ideas and assumptions. She demonstrates a 247 willingness to explore experiences as a potential means for deepening learning online that is 248 characteristic of "cognitive presence." Her comments also support the notion that 249 "cognitive presence" stems from "social presence" (Beuchot & Bullen, 2005). 250

A third student identifies with the discussion, adding "I think I know what you mean," 251 while a fourth tentatively offers an alternative perspective in discussing an opposing 252 experience, which is at odds with the conversation adding, "...don't know if that will help, 253 but that's my experience." Finally, the first student closes the discussion: 254

Hi guys, I just wanted to thank you very much for your replies to my critical incident255topic, they were all really helpful in getting me over my writer's block...256

The students appeared to enjoy the online contact and were able to ask questions openly, 258thus "building or scaffolding ideas" (Davis & Denning, 2000, p.79), and informing one 259another's critical reflections. The majority of students contributed actively online, possibly 260supporting the suggestion that "social loafing" is less likely to occur in cohesive groups 261(Alpay, 2005, p.10). These groups appear to have scored highly in both learning and group 262dynamics, which are perceived to be essential for the establishment of an on-line learning 263community (Davis & Denning, 2000). The interactions of these groups lead us to suggest 264that students are possibly motivated initially by the wish to be sociable and supportive of 265one another during a period of intense learning. However, that sociability is a precursor for 266enriching learning in situ, in the practice environment rather than back in the classroom. 267The move from face-to-face to an online context appeared to have been almost seamless in 268terms of the emotional and social climate or the learning dynamics in these groups. 269

Testing times-friends in adversity

In the classroom, Group 3 appeared to be a cohesive group ready to offer one another social 271 and intellectual support in the context of an easy rapport, which began to shape interaction 272 online. However, three members of the group experienced difficult first placements and 273 naturally they posted messages around their issues. A highly emotional tone and the use of strong, and at times unprofessional, language (replaced by asterisks below) more than 275 compensated for loss of visual cues to portray a sense of group solidarity and friends in 276 adversity: 277

Hi everybody. [Student A] says hi to y'all, she's nice and happy now with her278placement, got over the problems with [*****] educator. She hopes you are all doing279well...280

Slanderous postings, including the naming of individual educators and hospital units,282portrayed high levels of emotional contagion typical in groups with good rapport (Spoor &283Kelly, 2004). Emotional contagion, which is usually passed on via mimickery of facial284expression and posture (Spoor & Kelly, 2004), was conveyed through the use of strong285

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language and passionate discourse eliciting highly supportive responses from the group.286When one student stated "I don't think I can be strong anymore—my confidence is287shattered ...I'm even thinking about going back on my medication," another replied "I don't288think I can do this anymore, I want to come home."289

A worrying aspect of this contagion was a student posting her concerns about a future 290 placement, escalating the negative mood within the group, which seemed unable to 291 progress to explore the issues dispassionately and in any depth. This group might have been 292 expected to fall into Davis and Denning's "tough love" domain, which they acknowledge 293 can be characterized by anxiety. However, the group illustrated how emotion that escalates 294 beyond anxiety can get in the way of learning. 295

Intervention by the online tutor was aimed at encouraging in-depth exploration of the 296 perceived negative experiences and inspiring students into mutually beneficial reflection: 297

It is time that you turned your thoughts and replies to a more objective and critical298tone. You need to ask yourselves some difficult questions such as: Do I have a part to299play in this? How do I come across? Are there any others factors that might have300influenced the situation?301

The intervention succeeded in triggering meta-communication and reflection with the 303 result that students managed to work effectively through many of the issues. One student 304 reflected, "It is now clear that the reasons behind my dilemmas were not all the educator's fault, it was partly to do with me. I was unable to see it from her point of view." 306

The interaction of this group highlights the importance of timely and effective 307 facilitation where a group with good social dynamics and learning potential becomes too 308 emotionally charged to move their thinking beyond very superficial understandings. It also 309 highlights the possibility that cohesion that is cemented by a perceived threat might be detrimental to student learning if there is no mechanism or catalyst, such as a facilitator, to move students to reflect critically on experiences. 312

A mess of a grou	А	"mess"	of	а	group	p
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Assumptions tend to be made about the general desirability of meeting face-to-face in order 314to enhance subsequent online interaction (Alpay, 2005). However, not all groups establish 315cohesion even in a face-to-face context, and a particular group in this study was a case in 316point. Davis and Denning (2000) would label this group "fragmented by technologies"; low 317 on both group and learning dynamics. However, since the fragmentation was evident even 318 prior to attempting to engage interaction online, this group highlights a shortfall in Davis 319and Denning's model as an organizing framework for analyzing blended interaction. Very 320 little activity occurred online. One student who logged on to the critical incident forum was 321disappointed to find she was in the minority stating, "just thought I'd log on and see if 322 anyone else had-obviously not." 323

Despite pleas of "can anyone give me any feedback please," another student's attempt at posting a critical incident was ignored. Encouragement from the facilitator failed to improve on the level of apparent disinterest in sharing ideas, despite the fact that from the "tracking" facility we know that all of the students in the group did log on periodically. The social forum was used by a small number of students mainly for information exchange, such as "what is your placement like? I'm there next—are there any tips I need to know? Is there anyone I need to avoid?"

Subsequent written and group de-briefing feedback described the group variously as 331 *wicked, friendly, private* and a mess. Those students who were keen to learn were labeled as 332

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geeks. Further probing revealed lots of very small groups within the larger group, in which 333 students felt voiceless and not confident enough to post messages for fear of ridicule from a 334small number of disaffected students. This resonates with the findings of previous research 335 conducted on resistant learners in book club discussions, where only five students disrupted 336 whole groups of students (Hauschildt & McMahon, 1996). Group feedback, characterized 337 by the above labels, suggested that it was devoid of spirit, cohesion or bonding (Rovai, 338 2002). The subsequent lack of a common learning culture is hardly surprising where 339 Q1 students feel unable to project themselves socially and emotionally, even in a face-to-face 340 context. Several students suggested that if they had been unlikely to meet any of the group 341 face-to-face again following the online interaction they would have felt more able to voice 342their opinions and ideas more freely. However, the knowledge of having to spend another 343 whole year in the company of their peers silenced these students. This finding adds a caveat 344to the claim that online environments are less inhibiting than face-to-face interaction for 345quieter and less confident students (Hudson & Bruckman, 2004). 346

This group illustrates how less cohesive groups where collaboration is limited can 347 impact students' learning from their peers. Learning might be limited either because help is 348 withheld, which is illustrated by student comments such as "people don't reply," or because 349active disapproval is evident, such as the labeling of geeks. Both behaviors are integral to 350processes of social positioning in culturally constructed and socially imposed worlds 351(Holland, Lachicotte, Skinner, & Cain, 1998). Since the dynamics of this group appeared to 352remain stable across face-to-face and online settings, it seems likely that the processes of 353 shutting down of collaboration or social disapproval operate in similar ways in both aspects 354of the blended learning experience. This presents us with a considerable challenge; after 355Lindquist (1994), however, we are committed to listening to and working with resistance by 356 acknowledging a need for and being flexible enough to adopt a different approach to 357 facilitation, for instance. 358

Competing or finding a voice

Group 5 quickly divided into two subgroups once out of face-to-face contact: a small 360 cohesive group and a larger group that did not engage in the online forums overall. Prior to 361 this period of dependence on online contact, the group was considered by the tutor to be a 362strong, cohesive group who worked well together and had a strong social network. However, 363 a marked competitive element and several dominant characters might have been expected to 364influence the dynamics of the discussion forum once the students had dispersed to their 365 placements. Strangely, they did not. Some of the more dominant and competitive individuals 366 were noticeable by their absence. Following a group debriefing session at the end of the 15-367 week period, it became evident that these students did not wish to share their ideas with peers 368 with whom they perceived themselves to be in competition. They chose to opt out, 369 withholding help (Holland et al., 1998) for the other students. As the assignment deadline 370 approached, however, several strategic members did post messages in order to be able to 371reference the replies of their peers in their assignment, as the following excerpt illustrates: 372

I can't believe we have only six weeks left. From our (assessment) brief I think I am supposed to reference your reply comments as part of the write-up so I'd really appreciate your thoughts. 375

Davis and Denning's (2000) suggestion that if learning dynamics are high within a group 377 individuals may show little concern for others and will be inclined to work independently 378

rather than interdependently, adopting an "I'm ok, you're ok" attitude, seems to be an apt 379explanation for this group. Individuals need to have a motivation for joining and 380maintaining a group and they need to see the value of investing time in the discussion, 381as illustrated by the first two groups. However, time costs may simply outweigh potential 382rewards if there is a lack of perceived need to engage in the forum to achieve what for most 383 students is their primary concern, completing the module assessment and to doing well. 384 Rovai (2002) suggests that when group work is absent, group identity will be difficult to 385 establish and nurture and this seems to be what we observed within this subgroup of 386 students. Learners did not appear to feel mutually interdependent, possibly because their 387 contributions to the forum were not assessed. 388

The smaller cohesive subgroup became a tight learning community showing 389 commitment to the forum and displaying support, empathy and a willingness to help 390 others, seeing value in reciprocal altruism (Spoor & Kelly 2004): 391

THANKS to all of you that have commented—really useful. It's actually great to hear 392 that others of you have had similar problems and have some really good advice 393

Interestingly, it was the quieter students in the group when face-to-face that contributed 395most to the discussion forum on line. Sproull and Kiesler (1995) suggest that the online 396 absence of individuals who dominate face-to-face interaction, which allows others to have 397 an equal share of a discussion, can be attributed to the absence of cues that define the nature 398of the social situation. As a result, quieter individuals may be less concerned about 399 embarrassment or being judged negatively by their peers. Similarly, Hudson and Bruckman 400 (2004) suggest that quieter students feel less inhibited online because there is less of a sense 401 of a judging audience, and therefore self-awareness is significantly lower. 402

This group illustrates how a change of the context in which the group functions can 403 challenge prevailing group dynamics, as individual members experiment with new 404 identities on the fringes of the group. Unlike the previous group, where the possibility of 405 involvement and interaction online appeared untenable, the dynamics of this group were 406 generally positive, with some individuals only requiring space to find a way into 407 interaction, which was provided by the online context. This group also highlights how 408 difficult it can be for teaching staff, interacting with students in a face-to-face context, to 409 gain an insight into the dynamics within groups, but also how helpful this awareness might 410 be, especially for facilitating online groups. 411

Growth of the individual within groups

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The final group presented shows a progression from individuals engaging when circum-413stances allow (as occurred in the previous example), to individuals working strategically to 414 achieve interdependence rather than independence in their learning. Recognizing the 415greater potential for success as a collective, Group 6 shared the common understanding that 416working together would improve the quality of the learning experience for them all. This 417 was observable through a strong pro-active engagement with the classroom task, which was 418 the norm. The students openly encouraged one another to join in so that they each 419benefited in terms of learning. Behaviors that influence the "success" of individuals run in 420parallel to those which enhance group success, a fact that these individuals, and 421 subsequently the group, recognized. Nevertheless, there remained room in the group for 422 individual personalities and preferences of learning style, which were acknowledged and 423 respected by other students. As such, this group adopted a "tough love" ethos (Davis & 424 Denning, 2000). 425

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The transition to online interaction prompted noticeable changes in the contributions of 426 some members and continuity in others. Two members have been selected and given names 427 in the archetypal style. The 'Strategist' continued behavior demonstrated in class: if we all 428 play the game, then each of us will benefit. The student worked hard in posting material 429 right from the beginning, and exhorted the other students to respond by using direct 430 invitations. For example: 431

Have any of you had similar experiences or what do you think generally? I would432really appreciate your thoughts.433

She was also active in responding to other students' postings and, in contrast with the 435early postings of other students that focused on the immediacy and emotional experience of 436placements, she focused strategically on the demands of the assessment. The direct 437 invitations to respond to her postings continued throughout the forum, receiving more 438 challenging responses in the later stages of the group, possibly when the others felt they had 439more to give. For instance, after some discussion about a critically ill child a student asks 440 "was the child in pain? If so maybe it would have been best not to [resuscitate]. Some times 441 you have to be cruel to be kind." 442

The 'Mother' had been a quiet member of the group in class. However, online, it became 443 apparent that she was responding to each of the other student postings. Her responses were 444 often full and were typified by caring and thoughtfulness and a high degree of tact, serving 445to nurture the other students. The nature of the support changed as the group matured, 446 becoming more direct while still demonstrating great insight and tact. Retrospectively, it 447 was difficult to identify this behavior from in-class interactions, supporting research that 448suggests that students who are reserved and rarely contribute in class make insightful 449contributions online (Jewell, 2005). 450

Interestingly, this group had little need for a facilitator probably because it bore the characteristics of a well developed learning community. However, the group highlights that each group is made of individuals who are free to behave independently, and even as the collective interdependence creates the group, each member can engage and disengage from the group or change the way they contribute. 451 452 453 454

What have we learned?

The influence of group dynamics within a blended learning context is complex. However, 457 we tentatively make some broad observations within our own particular situation. 458Notwithstanding the one exception, positive group dynamics were generally present in 459the groups studied, possibly due to the similar pre-existing attitudes and values (Festinger, 4601954) of the students as developing health professionals. Group dynamics, whether positive 461 or negative, appear to be relatively stable across contexts when the foundation for online 462interaction is established during a lengthy period of face-to-face classroom contact. The 463quieter students who found a voice online do challenge this assertion, although whether 464their increased participation in their groups altered the social and emotional climate of those 465groups is unclear. We did not continue to study the groups once they resumed face-to-face 466 interaction, although this final phase has potential to further our understanding. Perhaps 467 these students serve to remind us that "ultimately it is individuals who learn, not groups" 468(Brookfield, 1986, p.60). 469

The potential that positive group dynamics generated for learning varied between 470 groups, depending on individuals and levels of social and cognitive presence within the 471

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group. The quality and volume of postings for Groups 1 and 2 were remarkable and their 472content seemed to benefit members greatly, although the interaction appeared to be largely 473 driven by the desire to be supportive, especially when compared with the final group 474(Group 6). Group 6 exhibited the prerequisites for a powerful learning community, based on 475the development of individual members that created a comfortable group ethos and a 476strategic approach to learning. Social presence appears to be vital for establishing positive 477 group dynamics; individuals, however, need to transcend the desire to be sociable and 478 supportive in order to develop the readiness to share and, importantly, to question tentative 479ideas and experiences as potential for learning online. Group 3 illustrates how groups that 480 exhibit cohesive tendencies, positive dynamics and motivation, but fail to question ideas or 481probe assumptions that might lead to deeper understandings require a good facilitator to 482raise their game. 483

These observations have led us to propose a tentative model, building on Davis and 484Denning's work, that elucidates the influences that come into play in a blended learning 485context. In developing the extended model, in light of our findings, we challenge Davis and 486 Denning's thinking in two respects. First, we question whether groups that are low on group 487 and learning dynamics are necessarily "fragmented by the technology." Given the 488 complexities of interaction illustrated by the "mess of a group," this appears too easy an 489explanation and has resulted in us re-labelling this group as the "fragmented group" in the 490figure below. Second, the "summer holiday" domain seems tenable in principle, but given 491 that none of our groups displayed positive group dynamics, without any transference into 492learning we cannot substantiate Davis and Denning's conceptualization of this domain at 493present. Perhaps it is more accurate to suggest that any learning in this type of group is 494incidental, and groups with weak learning dynamics would require considerable input from 495an online facilitator. This aspect of the model requires further exploration. Our own 496 tentative model is presented in Fig. 2. 497

We attempt to illustrate the movement from face-to-face to online interaction and back 498 again (phases appear as three boxes). The final transition has not been studied and will 499 require further work. There is, however, evidence that anticipated face-to-face contact 500



Fig. 2 Factors influencing group dynamics and learning dynamics in blended learning

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following online interaction influences that interaction; it is therefore identified as an 501influencing factor (by a backward arrow). Our findings support the assertion (Alpay, 2005) 502that the importance of a good facilitator cannot be underestimated, and as a consequence we 503include the online tutor as a central feature of the model and a link from one context to the 504other. The initial face-to-face phase contains a number of boxes making explicit contextual 505factors such as levels of anxiety, competitiveness, spirit and trust, which give rise to social 506and learning dynamics prior to online interaction. Tutor insight gained from other tutors and 507direct contact with groups appears helpful in predicting the climate within each group in 508preparation for adopting the optimal approach to facilitation. Other factors, such as 509familiarity with technology and learning objectives, which promote collaboration, are 510included in this phase as contextual factors that might influence subsequent online 511engagement. 512

The online phase represents the essence of Davis and Denning's domains, with the 513addition of the facilitator as having a vital and differential role within each of the groups. 514The speech bubbles make visible individuals who appear to emerge online having found a 515voice in the new medium. Whether group dynamics and learning dynamics alter following 516the transition back to face-to-face contact, especially following the emergence of 517individuals online, is currently unclear. We have more work to do, especially in testing 518and further developing our model. However, the insight we have gained from exploring 519group dynamics and their impact on learning has enhanced our understanding of how the 520potential benefits of online support for health and social care students in practice settings 521might be optimized. 522

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Q1. "Festinger, 1959" was changed to "Festinger, 1954" and "Rovai, 2000" was changed to "Rovai, 2002". Please check if appropriate.

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