

Case Report: The impact of Online Forum Use on Student Retention in a Level 1 Distance Learning Module

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The importance of making online and distance education successful has been dramatically prioritized due to the COVID-19 pandemic. Student retention is a key performance indicator in online higher education. Evidence suggests that within online distance education the key to retaining students is to encourage an engaging and supportive online community. Online asynchronous forums are one method that has been employed to promote such engagement. This study investigated the relationship between online forum activity and student retention amongst 21 tutor groups on an Open University Level 1 module. It found that the volume of tutor group forum activity had a significant association with student retention ($p < 0.05$ two-tailed, Pearson $r = 0.53$), with student contributions having a greater impact on retention ($p < 0.01$ two-tailed, Pearson $r = 0.628$) than tutor contributions. Although tutor contributions did not appear to impact student retention directly the number of tutor and student posts were highly correlated ($p < 0.001$, two tailed, Pearson $r = 0.86$). Results indicate that asynchronous forums can be an effective tool in promoting student retention in an online distance learning environment. Important factors that impact on student retention within the educational medium of asynchronous forums are evidenced. The implications of these findings for educators are discussed.

Keywords: distance learning, student retention, forum participation, online learning community.

Introduction

One consequence of the recent COVID-19 pandemic has been that many universities across the world have had to develop and implement online teaching provision. Consequently, understanding how to best ensure the success of Higher Education students studying within online teaching environments has assumed a greater importance across the university sector worldwide. A commonly used measure of how successful a course or module has been is student retention i.e. the number of students who successfully complete a module. This is particularly important in the context of online higher education, where the number of students who fail to complete is significantly higher than found in traditional university settings (Woodley & Simpson, 2014). Although many factors influence these phenomena, the use and nature of student online forums has been suggested as significant (e.g., Khalil & Ebner, 2014). Asynchronous forums, where posts can be entered by individuals at any time, have become the most widely used (De Lima,

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Gerosa, Conte, & Netto, 2019) and for this reason this paper explores the role of online asynchronous forums in student retention.

The context of this research is a level 1 sport and fitness module at The Open University in the United Kingdom (U.K.). The Open University is the largest university in Europe with approximately 173,927 students and a network of more than 5,000 tutors (The Open University, 2018a). Students, both within the UK and overseas, study at a distance through the provision of access to a distinct form of distance learning known as "supported open learning" that aims to offer flexibility, inclusivity, support and social opportunities with no formal entry requirements for the majority of modules (The Open University, 2018b). This approach incorporates teaching strategies including online tutorials and activities, printed materials, one to one student support sessions, forum discussions, a range of online support tools as well as online assignment submissions and feedback.

The type of study experience offered by The Open University has increased in popularity (Yuan & Kim, 2014), firstly because of its purported benefits, and secondly because of the increased need for online education. This increased demand for online education has risen to meet student's needs for flexible study schedules and provide opportunities to study that would not typically be available (Parsad & Lewis, 2008). Distance learning has many benefits for the learner in terms of accessibility of information and the speed at which questions can be answered; however, it has its problems and often poses challenges to retention (Sánchez-Elvira Paniagua & Simpson, 2018). For example, distance learners can encounter potential barriers such as physical separation, feelings of isolation, lack of support and feeling disconnected (Angelino, Williams, & Natvig, 2007). Difficulty can arise in forming and maintaining relationships between tutor and student and also between students, and it is this lack of interaction that has been linked to dropout (Yuan & Kim, 2014). Without a community, such as that generated in a typical face to face university, students can often experience isolation when studying online (Lee & Choi, 2011). To counteract this problem educators strive to develop an "online learning community" whereby learners interact with one another to achieve the shared learning outcomes of the module in addition to feeling connected and providing support for one another (Anderson, 2004). A variety of tools can be employed to develop an online learning community and asynchronous discussion, using forums, is one of the mechanisms. In the age of social media research reports that forums remain a popular choice by students to support learning and increase knowledge and understanding (Dommett, 2019). The nature of asynchronous forums supports the flexible learning approach of the Open University because students can contribute to them at any time, typically within the current week of study. In addition to their flexibility, for individuals who are quiet, shy or more reflective and like to take their time before they respond, forums can alleviate concerns and encourage greater participation than a face to face oral situation (Hew, 2015; Yuan & Kim, 2014).

The Open University use forums for two main purposes; to provide students with a feeling of studying with others and reduce isolation, and to achieve specific learning outcomes (Thorpe & Norwood, 2013). Research suggests that for forums to be effective it is imperative that the aims of the forum are established and

conveyed at the beginning of the module, to ensure both tutors and students understand what is expected of them (Thorpe & Norwood, 2013; Nandi, Hamilton, & Harland, 2012). In a study interviewing Open University students regarding their experience of using online forum communication Kear (2010) reported that a *social presence* was a key factor in student experience. Social presence is defined as "the need for users to feel connected with each other and to perceive each other as real people" (Kear 2010, p. 1). She found that experiencing low social presence could be a particular problem within asynchronous forums (Kear, 2010).

Students felt one of the ways to improve social presence was to increase the use of their online profiles to know each other better (Kear, Chetwynd, & Jefferis, 2014). Other researchers have also cited social presence as an important element of successful online learning (e.g., Wei & Chen, 2012; Yuan & Kim, 2014). Forums have been identified as a potential method to enhance social presence, with peer interaction having the greatest influence (Garrison & Cleveland-Innes, 2004); however, the role of the tutor must not be underplayed as both social and cognitive presence (the process by which individuals learn through educationally driven engagement with peers) must be integrated through teaching presence to create an effective online learning community (Garrison & Cleveland-Innes, 2005). For example, Rovai (2007, p. 77) suggests that tutors "need to provide discussion forums for socio-emotional discussions that have the goal of nurturing a strong sense of community within the course as well as group discussion forums for content-and task-oriented discussions that centre on authentic topics". This highlights the link between a sense of community and curriculum design.

In a review of asynchronous online discussion Hammond (2005) notes curriculum design as key to facilitating group cohesion and participant engagement, and that learning activities should be scheduled to allow time for reflection and be realistic in terms of student workload. Hammond (2005) recommends that online discussions are of most value to topics requiring conceptual understanding rather than learning skills or techniques. Participation in online forums can also contribute to student assessment; however, Oliver and Shaw (2003) found that whilst this increased participation students were often "playing the game", and interaction was "superficial".

Whilst the success of a forum relies heavily upon curriculum design and the way it is used within a module, Angelino, Williams and Natvig (2007) also recommend more informal chats with "spontaneous interactions" helping to build positive relationships and learning communities. Peer interaction is a crucial element of developing such communities and research by Dommett (2019) indicated that students used the forum to predominantly engage with their peers in module related discussion to support knowledge and understanding. Some studies have even reported that input from other students to be more important than input from staff (e.g., Kear, 2002). For students' success it is a combination of, and balance between, student-centred and tutor-centred discussion that has been identified as most advantageous (Nandi, Hamilton, & Harland, 2012). Tutors play a central role in the success of a forum; if tutors do not engage in their forum then it is unlikely that their students will (Thorpe & Norwood, 2013); however, over domination by a tutor can also discourage student participation (Rovai, 2007). The

ability to moderate a forum effectively is an important skill and consequently all Open University tutors engage with mandatory forum moderation training.

The Open University uses threaded forums where the students can either post a response to an existing thread or create a new discussion thread (Gao, Zhang, & Franklin, 2013). The structure of the forum and the way in which information is presented is also important, as often the asynchronous nature of forum discussions can cause lengthy and multiple threads of messages, leaving the student to sort through irrelevant postings (Vonderwell & Zachariah, 2005). Further potential problems include delayed, negative or irrelevant feedback from peers and tutors which can reduce student motivation to interact (Abawajy, 2012). Rovai (2007) argues that these weaknesses can be reduced and even eradicated by a skilful moderating tutor, stressing that tutors must create a safe learning environment where all members of the learning community feel valued to achieve equitable and effective discourse. The way a tutor supports and promotes interaction can influence student motivation to engage with others (Cho & Kim, 2013) and determine the direction and boundaries for discussion (Nandi, Hamilton, & Harland, 2012); however, studies investigating the value of online communities show mixed results and LaPointe and Reissetter (2008) reported that while some students considered an online community beneficial to their learning others considered such online communication with their peers as "superfluous" and "inconvenient". In an investigation of level 1 Open University students Simons, Beaumont and Holland (2018) found that some students studied "pragmatically" and did not engage with the forum, citing a lack of time and the number of postings as too onerous to manage, whereas other students found the forums a valuable source of peer and tutor support. Therefore, in modules where tutor group forum participation is beneficial but not compulsory, regardless of tutor skill not all learners choose interaction and some would rather study independently (Anderson, Huttenlocher, Kleinberg, & Leskovec, 2014).

In summary, the research discussed suggests that asynchronous discussion tools such as forums have a place within online distance education to both reduce student isolation and where appropriate to support students to achieve certain learning outcomes, both with the aim of aiding student retention. For these objectives to be reached students and tutors need to be clear from the outset on how and when to use such tools. The tutor must also be skilful in their moderation to develop social presence and offer the right level of support and guidance to students within their group; however, such tools are not without their problems, with a range of additional factors (e.g., a few students monopolising the forum, students posting insensitively etc.) influencing their effectiveness. Furthermore, whilst the potential benefits of engagement with asynchronous forums have been clearly elucidated, the relationship between asynchronous forum engagement and retention remains relatively unexamined at scale, with contradictory findings (Hughes & Price, 2019).

The purpose of this study was to establish if a relationship exists between the volume of asynchronous forum activity and student retention, using the case study of a level 1 Open University distance learning module. The hypotheses investigated are stated below.

Hypotheses

- A. There will be a positive relationship between the total number of combined student and tutor posts on the forum and student retention.
- B. There will be a positive relationship between the number of tutor posts on the forum and student retention.
- C. There will be a positive relationship between the number of student posts on the forum and student retention.
- D. There will be a positive relationship between the number of tutor posts on the forum and the number of student posts.

Methods

Participants

The participants were all tutors and students from one presentation of an Open University level 1 sport and fitness module. Participants consisted of 493 students randomly allocated to 21 tutor groups (a group of 16–26 students allocated one tutor), with 17 tutors (4 tutors had two groups). Students are allocated equally to each tutor; however excess numbers are allocated according to contractual obligations of each tutor.

The module examined in this paper provided each tutor group with its own forum (tutor group forum, TGF) which opens on the first day of the module and is only available to the tutor and the students in each group. These tutor group forums aim to provide peer and tutor support, reduce student isolation, and provide a platform for students to engage in subject discussion to support the achievement of learning outcomes. Activities within the module materials direct students to the forum and invite them to post their opinions/thoughts on module relevant topics, as well as making an introductory post in the first week of study which contributes five percent of marks towards their first assignment.

The module, reflective of the Open University's policy of open access, typically attracts extremely diverse groups of students in terms of experiences and backgrounds, which contributes richness to discussions (Heaney & Walker, 2012). It is clearly stated within the module learning materials that the TGF is the main form of communication between students, and between the students and the tutor (although alternative methods of communication are used when and where appropriate). Although TGFs are the primary mechanism of communication with the tutor and fellow students for this module, engagement in the TGF was not compulsory to pass the module. Even though the introductory post contributed marks to the first assignment the student was still able to pass this without making a forum contribution. The level of forum moderation expected from tutors is clearly communicated and all tutors attend moderation training in the first year of their appointment. Tutors were required to check their forums regularly (at least twice in the week and once at weekends); however, most tutors subscribe to their

forums (which send email notification of new posts) to ensure responses are issued promptly.

Measures

Student retention was measured for each tutor group by the number of students who submitted the final assessment divided by the number of students registered at the start of the module (including those who submitted and failed).

Tutor group forum activity was measured by the total number of posts made over the duration of the presentation. These data were then further divided into the number of tutor posts and the number of student posts, the number of tutor-initiated discussion threads, the longest discussion thread in each forum and the number of discussion threads comprising one single post.

Procedure

Data were collected at the end of a full presentation of the module and involved the collation of data relating to the volume of posts and student retention. The total number of posts on each TGF for one complete presentation of the module (from October to June) was calculated. These were then divided into the total number of tutor and student posts, tutor-initiated posts, the longest threads and the number of single post discussion threads. Retention figures for each of the 21 tutor groups within the module were also recorded with the initial measure taken at the beginning of the module in October and the second measure of those submitting their final assessment in June. Where a tutor had more than one group these were investigated as two different data sets.

To investigate the relationship between TGF posts and retention a series of Pearson product moment correlations were undertaken. The first compared the total number of TGF posts and tutor group retention figures (hypothesis A), the second compared the number of tutor posts on the TGF and the tutor group retention figures (hypothesis B), the third compared the number of student posts on the TGF and the tutor group retention figures (hypothesis C) and the final comparison looked at the number of tutor posts on the TGF and the number of student posts (hypothesis D).

Results

Table 1 shows the retention figure, total number of TGF posts, number of tutor posts, student posts, and tutor-initiated threads (with the percentage figures also provided), as well as the longest thread and the number of threads with just one post, for each tutor group. Two forums accumulated over 300 posts, although the student and tutor contributions of each of these two groups varied. The tutor group with the highest retention at 90% had only 20% tutor input with the majority of contributions (80%) and initiated threads (66%) from students. The group with the lowest retention had a very low tutor input (3%), with only one thread initiated

by the tutor, and only 58 student posts. The introductory posts at the beginning of the module, which counted 5% towards the first assessment, were the longest thread for each group with the exception of group B, whose longest thread discussed extensions of the final assessment, and group K, where the longest thread related to referencing.

Figure 1 illustrates the relationship between TGF posts and retention for each tutor group. The information relating to the number of tutor-initiated discussion threads, the longest discussion thread in each forum and the number of discussion threads comprising one single post provides further context to each TGF.

A Pearson product moment correlation was undertaken to establish the strength of association between tutor group retention and tutor group forum activity (hypothesis A). There was a significant relationship between total number of tutor group forum posts (student and tutor posts) and tutor group retention ($p < 0.05$ two-tailed, Pearson $r = 0.53$) as shown in Figure 1.

Figure 1. Retention and the Number of Tutor Group Forum Posts

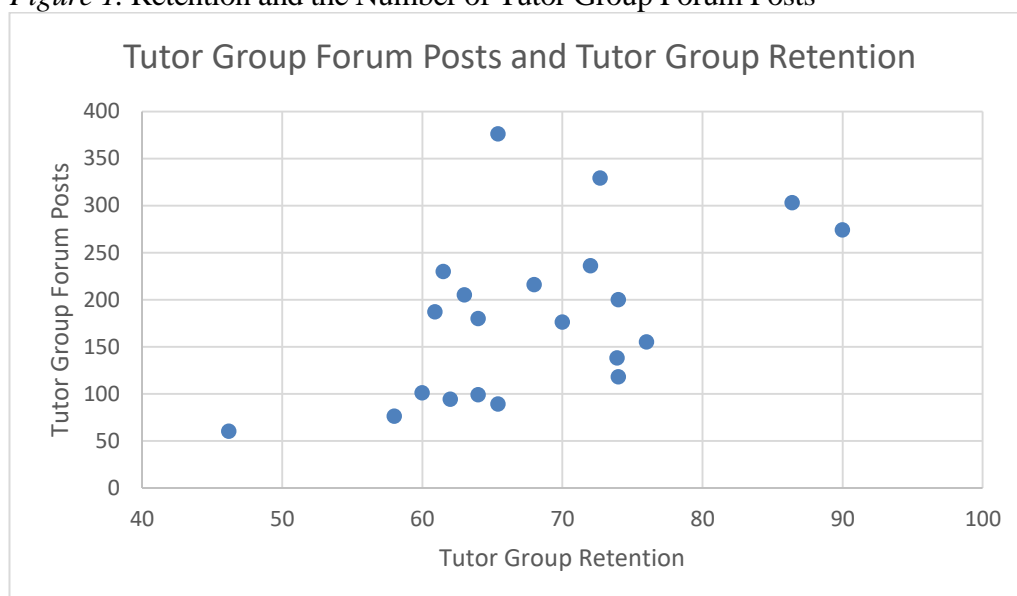


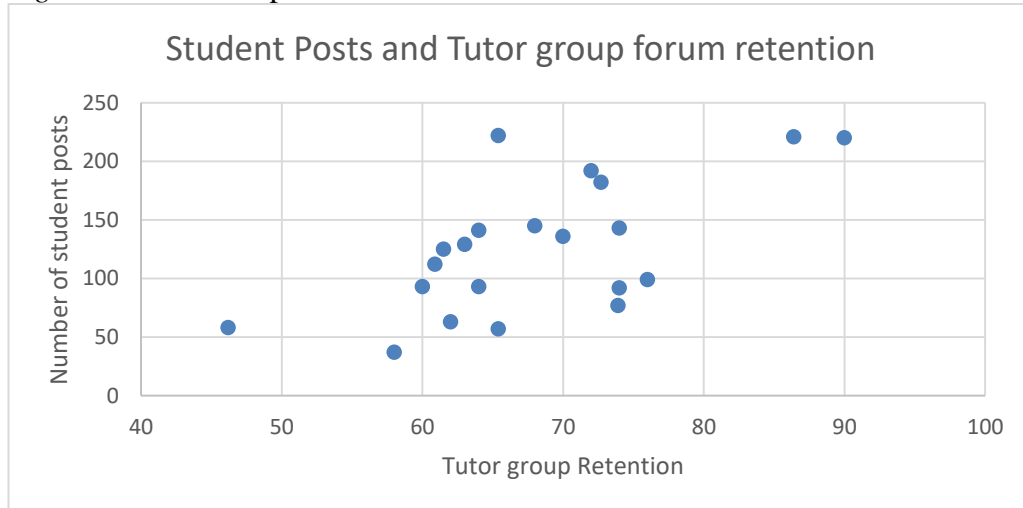
Table 1. Data by Tutor Group

Group	Tutor group retention (%)	Total number of TGF posts for presentation	Total number of tutor posts (% of total posts)	Total number of student posts (% of total posts)	Total number of threads	Number of tutor initiated threads (% of total threads)	Longest thread	Number of threads with only 1 post (% of total threads)
A	90	274	54 (20%)	220 (80%)	67	23 (34%)	19	19 (28%)
B	86	303	82 (27%)	221 (73%)	95	12 (13%)	22*	43 (45%)
C	76	155	56 (36%)	99 (64%)	59	22 (37%)	29	25 (42%)
D	74	200	57 (29%)	143 (71%)	60	16 (27%)	34	20 (33%)
E	74	118	26 (22%)	92 (78%)	26	14 (54%)	31	15 (58%)
F	74	138	61 (44%)	77 (56%)	37	23 (62%)	32	22 (59%)
G	73	329	147 (45%)	182 (55%)	71	20 (28%)	28	9 (13%)
H	72	236	44 (19%)	192 (81%)	41	9 (22%)	28	8 (20%)
I	70	176	40 (23%)	136 (77%)	58	22 (38%)	17	28 (48%)
J	68	216	71 (33%)	145 (67%)	37	15 (41%)	56	8 (22%)
K	65	376	154 (41%)	222 (59%)	70	29 (41%)	34*	15 (43%)
L	65	89	32 (36%)	57 (64%)	51	17 (33%)	11	35 (69%)
M	64	180	39 (22%)	141 (78%)	50	19 (38%)	38	28 (56%)
N	64	99	6 (6%)	93 (94%)	18	5 (28%)	22	4 (22%)
O	63	205	76 (37%)	129 (63%)	55	22 (40%)	33	21 (38%)
P	62	94	31 (33%)	63 (67%)	48	21 (44%)	22	32 (67%)
Q	62	230	105 (46%)	125 (54%)	35	26 (74%)	36	10 (29%)
R	61	187	75 (40%)	112 (60%)	40	21 (53%)	64	13 (33%)
S	60	101	8 (8%)	93 (92%)	43	7 (16%)	18	27 (63%)
T	58	76	39 (51%)	37 (49%)	25	17 (68%)	36	16 (64%)
U	46	60	2 (3%)	58 (97%)	15	1 (7%)	25	9 (60%)

NB: *the longest thread in these groups was not the introductory thread.

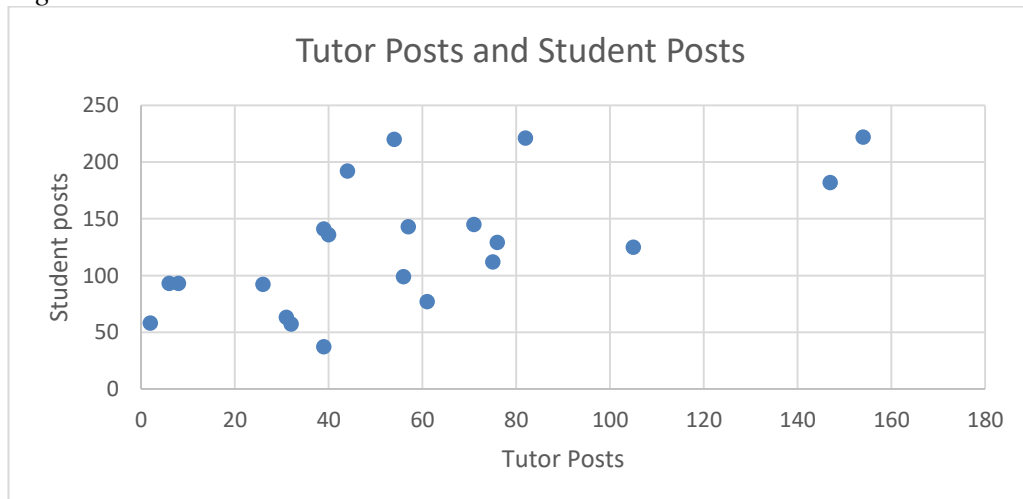
There was not a significant relationship between student retention and the number of tutor posts; however, a strong (Evans, 1996) and significant relationship existed between the total number of student posts and student retention ($p < 0.01$ two-tailed, Pearson $r = 0.628$). This relationship is illustrated in Figure 2.

Figure 2. Tutor Group Retention and Student Posts



Although there was not a significant relationship between the number of tutor posts and student retention, there was some evidence to suggest an indirect influence. A strong and significant relationship existed between the number of tutor posts and the number of student posts ($p < 0.001$, two tailed, Pearson $r = 0.86$) as shown in Figure 3.

Figure 3. Tutor Posts and Student Posts



Discussion

Retention is an important outcome measure of effective teaching and learning in undergraduate education. The purpose of this study was to investigate the potential link between TGF activity and retention to inform future practice and curriculum design.

Total Tutor Group Posts and Student Retention

The results show that a significant relationship exists between the number of TGF posts (by students and tutors) and student retention ($p < 0.05$ two-tailed, Pearson $r = 0.53$). This indicates that the overall level of forum activity is an important factor for understanding student retention issues; however, within this context, it is the number of posts by students which is significant ($p < 0.01$ two-tailed, Pearson $r = 0.628$), and not the number of posts made by tutors. The findings imply that tutor posts may have an indirect influence, as a strong and significant relationship existed between the number of tutor posts and the number of student posts ($p < 0.001$, two tailed, Pearson $r = 0.86$).

The data provide support for hypothesis A showing a significant relationship between TGF posts and retention. For example, the least active TGF (a total number of 60 posts) had the lowest retention at 46% (see Table 1). In this instance, the tutor only initiated one discussion thread and commented on another, suggesting that they had not engaged with this communication tool. The students within this group did engage with the compulsory element at the start of the module which gained 25 posts, and initiated 14 further discussion threads, 9 of which did not gain any response. It is possible that tutors used other forms of communication individually with students; however, the tutor guidance for this module stipulates that the TGF is the main form of communication with students. Further to this all five tutor groups where the total number of TGF forum posts for each group was less than 100 had retention figures of 65% or less, falling in the lower half of the module's retention by tutor group. The figures imply that lower student retention may have been influenced by lower levels of TGF activity. In contrast the two tutor groups with the highest retention (90% and 86%) both had very active TGFs with 274 and 303 posts respectively. Yet, the group with the highest number of posts (376) did not have the highest retention (65%), which suggests a more intricate relationship than simply more posts equals better retention. For example, the nature of the posts and their content, the number of individual students posting, the timeliness of posts and the interaction between posts are all factors that may influence the effectiveness of forum communication and ultimately impact retention.

According to Thorpe and Norwood (2013) TGFs help reduce isolation, and so in this instance students within the groups showing lower participation may have experienced feelings of isolation, a factor known to contribute to withdrawal (Angelino, Williams, & Natvig, 2007); however, although activities in the module materials direct students to the TGF at various stages to discuss key issues they are not compulsory to pass the module, and therefore as reported by Simons,

Beaumont and Holland (2018) students short of time may choose not to engage in these tasks, without being at risk of withdrawal. Unsurprisingly the compulsory introductory post leads to an extremely high volume of forum posts within the first two weeks of the module, and for all but two tutor groups this was the longest discussion thread. This reinforces the view that communicative activities should be compulsory rather than optional to increase uptake, although as Oliver and Shaw (2003) advise, engagement does not necessarily lead to interaction, and in this instance introductory posts could be simply a way to "play the game" and gain marks for assessment.

Tutor and Student Contributions to TGF Activity and Retention

The number of posts by students showed a significant relationship to retention ($p < 0.01$ two-tailed, Pearson $r = 0.628$), supporting hypothesis C, but not the number of posts made by tutors, rejecting hypothesis B. A strong and significant relationship existed between the number of tutor posts and the number of student posts ($p < 0.001$, two tailed, Pearson $r = 0.86$), supporting hypothesis D, which suggests an indirect relationship between tutor posts and student retention. For example, a tutor who is active on the forum encourages greater engagement from their students, and increased student forum activity has a significant relationship to retention; however, the three groups with the highest retention had relatively lower percentages of tutor-initiated discussion threads, which could be indicative of more confident, autonomous learners.

These data support Kear's (2002) research where students reported input from other students to be more important to them than input from staff; however, with such a strong correlation between student and tutor contributions the tutor role may have greater significance than these statistics suggest. For example, if we investigate individual TGF data further, Table 1 shows that the top 5 tutor groups in terms of retention had tutors that posted moderately on their TGFs, ranging from 26–82 posts, with percentage contributions of 20%–36%. The 5 tutors with lowest retention posted 2–105 posts with percentage contributions of 3%–51%, thus showing a wider range of variation. The tutor making the highest number of posts (154, 41% of the total TGF posts), did not achieve the highest retention, with a tutor group retention figure of 65%. The tutor with the lowest number of posts, with only 2 posts, had the lowest retention of 46%, supporting research by Yuan and Kim (2014) that lack of interaction may lead to dropout. These figures suggest an intricate relationship between tutor and student contributions to tutor group forums, implying that there may be an optimal level of TGF activity that is engaging, but not too time consuming and demanding for those involved, and further investigation is needed to potentially identify optimal levels of tutor involvement. In addition, the skill of the tutor in moderating the TGF in terms of organisation and structure (Vonderwell and Zachariah, 2005) and students feeling valued and safe (Rovai, 2007) must also be taken into account rather than a sole focus on volume of posts. The findings of the current study would appear to support those of Nandi, Hamilton and Harland (2012) who concluded that a

combination of student-centred and tutor-centred discussion elicits the most positive outcome.

Implications for Practice and Future Study

Whilst this study has provided an insight into the links between TGF engagement and student retention for Open University sport and fitness Level 1 students it does have some limitations. One of the main limitations of this study is that the content of forum posts was not qualitatively analysed. This would be useful to further explore Rovai's (2007) suggestion that skilful moderation and the quality of tutor posts is as important as quantity. In addition, further investigation is needed to include more detailed analysis of student contributions. For example, whether it is the same students who do not engage with the forum that fail to complete the module. Other limitations include not collecting data on how many students posted rather than just the number of posts and an exploration of how the retention of those students who didn't post at all compared to those who did. In addition, only looking at data from one presentation may not account for variations in student behaviour from one year to the next.

There are many factors such as the timing of responses to posts in each forum and the contribution of postings across the spread of the tutor group that would benefit from further exploration. In addition, passive readers who engage with the forum but do not post were included in this study but not categorised. These students form an important demographic as they are still considered to be engaging with the forum and benefitting from doing so. Future qualitative studies would gain from exploring tutor and student perspectives to give richer data to support quantitative data and the fact that retention is influenced by many factors, not just forum engagement (although it may be a good indicator). Studies comparing more than one presentation, involving the same tutors, would also prove useful in evaluating consistency of student TGF use.

It is important to note that TGFs are only one component of the module with factors such as tutor feedback, module resources and materials, tuition and assessment design potentially also contributing to retention. Additionally, the complex nature of open access distance university students are unaccounted for, with withdrawal often linked to personal circumstances. It is therefore difficult to imply a direct causal relationship between TGF engagement and student retention; however, it may be that lack of engagement with the forum could be indicative of a lack of engagement with the module more generally (both student and tutor) and so TGF use could be a useful indicator to tutors of any "at risk" students. Data presented in this study suggests that effective moderation of TGFs to aid the retention of students involves moderate tutor involvement to encourage student engagement. In fact, the study would propose an optimal level of tutor involvement whereby too few posts by the tutor can cause lack of student engagement and poor retention, and excessive tutor posts can fail to lead to greater retention; however, further study is recommended to compare TGF activity with other activity such as assessment grades, accessing online materials, and attendance at online tutorials.

Conclusion

This study provides support for a positive relationship between TGF activity and student retention on a Level 1 module at The Open University. As such care should be taken to encourage both tutor and student engagement with module forums to create an online learning community to reduce student isolation and potentially aid retention. Although retention is multi-faceted, with many factors beyond the TGF influencing retention, it seems that the tutor is key in influencing student engagement with forums. The findings reveal a strong positive relationship between the number of student and tutor posts, suggesting that if tutors engage then students will too; however, the impact of tutor posts is overshadowed by the stronger positive relationship found between the volume of student posts and student retention. This indicates that the level of student engagement within asynchronous forums is an important factor for educators to note when seeking to develop successful online learning experiences.

References

- Abawajy, J. (2012). Analysis of asynchronous online discussion forums for collaborative learning. *International Journal of Education and Learning*, 1(2), 11-21.
- Anderson, B. (2004). Dimensions of learning and support in an online community. *Open Learning: The Journal of Open, Distance and e-Learning*, 19(2), 183-190.
- Anderson, A., Huttenlocher, D., Kleinberg, J., & Leskovec, J. (2014). Engaging with massive online courses. *Paper Presented at the 23rd International Conference on World Wide Web*, Seoul, Korea.
- Angelino, L.M., Williams, F.K., & Natvig, D. (2007). Strategies to engage online students and reduce attrition rates. *Journal of Educators Online*, 4(2), 1-14.
- Cho, M. H., & Kim, B. J. (2013). Students' self-regulation for interaction with others in online learning environments. *The Internet and Higher Education*, 17(Apr), 69-75.
- De Lima, D. P. R., Gerosa, M. A., Conte, T. U., & de M. Netto, J. F. (2019). What to expect, and how to improve online discussion forums: the instructors' perspective. *Journal of Internet Services and Applications*, 10(1), 1-15.
- Dommett, E. J. (2019). Understanding student use of twitter and online forums in higher education. *Education and Information Technologies*, 24(1), 325-343.
- Evans, J. D. (1996). *Straightforward statistics for the behavioral sciences*. Pacific Grove, CA: Thomson Brooks/Cole Publishing Co.
- Gao, F., Zhang, T., & Franklin, T. (2013). Designing asynchronous online discussion environments: recent progress and possible future directions. *British Journal of Educational Technology*, 44(3), 469-483.
- Garrison, D. R., & Cleveland-Innes, M. (2004). Critical factors in student satisfaction and success: facilitating student role adjustment in online communities of inquiry. *Elements of Quality Online Education: Into the Mainstream*, 5(Jan), 29-38.
- Garrison, D. R., & Cleveland-Innes, M. (2005). Facilitating cognitive presence in online learning: interaction is not enough. *The American Journal of Distance Education*, 19(3), 133-148.
- Hammond, M. (2005). A review of recent papers on online discussion in teaching and learning in higher education. *Journal of Asynchronous Learning Networks*, 9(3), 9-23.

- Heaney, C. A., & Walker, N. C. (2012). The challenges and opportunities of teaching sport and exercise psychology at a distance. *Sport and Exercise Psychology Review*, 8(2), 65-71.
- Hew, K. F. (2015) Student perceptions of peer versus instructor facilitation of asynchronous online discussions: further findings from three cases. *Instructional Science*, 43(1), 19-38.
- Hughes, G. & Price, L. (2019). Systematic peer reviewing versus a discussion forum for promoting online learner success: an evaluation of innovative learning design for postgraduate students. In *Proceedings of the 28th ICDE World Conference on Online Learning 2019*. (pp. FP 037). Dublin, Ireland: National Institute for Digital Learning (NIDL).
- Kear, K. (2002). Using asynchronous discussion tools in engineering education. In *E-Technologies in Engineering Education: Learning Outcomes Providing Future Possibilities: A United Engineering Foundation Conference, 11-16 August 2006*. Davos, Switzerland.
- Kear, K. (2010). Social presence in online learning communities. In *Proceedings of the 7th International Conference on Networked Learning 2010, 3-4 May 2010*. Aalborg, Denmark.
- Kear, K., Chetwynd, F., & Jefferis, H. (2014). Social presence in online learning communities: the role of personal profiles. *Research in Learning Technology*, 22(Aug), 1-15.
- Khalil, H., & Ebner, M. (2014). MOOCs completion rates and possible methods to improve retention - A literature review. In *World Conference on Educational Multimedia, Hypermedia and Telecommunications 2014 (ED-Media)*. Tampere, Finland.
- LaPointe, L., & Reisetter, M. (2008). Belonging online: students' perceptions of the value and efficacy of an online learning community. *International Journal on E-learning*, 7(4), 641-665.
- Lee, Y., & Choi, J. (2011). A review of online course dropout research: Implications for practice and future research. *Educational Technology Research and Development*, 59(5), 593-618.
- Nandi, D., Hamilton, M., & Harland, J. (2012). Evaluating the quality of interaction in asynchronous discussion forums in fully online courses. *Distance Education*, 33(1), 5-30.
- Oliver, M., & Shaw, G. P. (2003). Asynchronous discussion in support of medical education. *Journal of Asynchronous Learning Networks*, 7(1), 56-67.
- Parsad, B., & Lewis L. (2008). *Distance education at postsecondary institutions: 2006-07*. National Center for Education Statistics.
- Rovai, A. P. (2007). Facilitating online discussions effectively. *The Internet and Higher Education*, 10(1), 77-88.
- Sánchez-Elvira Paniagua, A., & Simpson, O. (2018). Developing Student Support for Open and Distance Learning: The EMPOWER Project. *Journal of Interactive Media in Education*, 9(1), 1-10.
- Simons, J., Beaumont, K., & Holland, L. (2018). What factors promote student resilience on a level 1 distance learning module, *Open Learning: The Journal of Open, Distance and e-Learning*, 33(1), 4-17.
- The Open University (2018a). *Facts and figures*. Retrieved from <http://www.open.ac.uk/about/main/strategy-and-policies/facts-and-figures>. [Accessed 27 January 2021]
- The Open University (2018b). *Teaching and research*. Retrieved from <http://www.open.ac.uk/about/main/teaching-and-research>. [Accessed 27 January 2021]

- Thorpe, M., & Norwood, L. (2013). *Review of the strategic use of FORUMs on Modules and qualifications produced by the institute of educational technology*. UK: Institute of Educational Technology, The Open University.
- Vonderwell, S., & Zachariah, S. (2005). Factors that influence participation in online learning. *Journal of Research on Technology in Education*, 38(2), 213-230.
- Wei, C. W., & Chen, N. S. (2012). A model for social presence in online classrooms. *Educational Technology Research and Development*, 60(3), 529-545.
- Woodley, A., & Simpson, O. (2014). Student dropout; the elephant in the room. In O. Zawacki-Richter & T. Andersen (Eds.), *Online Distance Education: Towards a Research Agenda*. Edmonton, AB: AU Press.
- Yuan, J., & Kim, C. (2014). Guidelines for facilitating the development of learning communities in online courses. *Journal of Computer Assisted Learning*, 30(3), 220-232.

