The power of Us: Investigating the value of interaction and community in postgraduate studies

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The power of community – of *Us* – has long been assumed to be important in adult learning. Student interactions on discussion forums are encouraged, and it has been claimed that they foster a learning community which makes a difference to student outcomes through collaboration and joint construction of knowledge. This paper reports on interim results of a research project to establish, firstly, if there is a correlation between student participation in forums and their overall course outcomes, and secondly, shares a matrix designed to code both social and cognitive forum activity, to support an investigation into the existence of a learning community in student forum conversations – the power of *Us*.

Introduction

A central feature of online learning is the use of discussion forums and the interactions and relationships they support. Discussion forums, especially at post graduate level, are viewed as a way to facilitate knowledge construction through sharing, critiquing, evaluation and synthesis (Schrire, 2004). Students can support each other both socially and academically, creating a sense of belonging to the community they may be forming online (Ke &Hoadley, 2009). If these interactions are valuable, it should firstly be possible to establish a relationship between participation in forums and the overall grade the student receives for the course. Secondly, it should also be evident if there is indeed a learning community developing, and if so what are the signs of that? This paper discusses a work in progress investigating the effect of student to student interaction in discussion forums on final grades, and endeavours to establish if indeed a learning community has developed which might be supporting those outcomes.

Links to success

Researchers have concluded that in online discussion forums, login frequency has predictive value for a final grade attained by the student (Smith, Lange, & Huston, 2012; Romero, Luna & Ventura, 2013) Although Davies and Graff's (2005) study suggested that greater online interaction did not lead to significantly higher final grades, the study did show that students who failed courses participated less online. However later studies have showed links between forum participation and final grade. Nandi, Hamilton, Harland and Warburton's (2011) study showed a correlation between activity in forums and grades, as did Green, Farchione, Hughes and Chan (2014) and Cheng and Chau (2015). Macfadyen and Dawson (2010) showed that the total number of discussion messages posted had positive correlations with final grades. Xial, Fielder and Siragusa (2013) found a similar correlation between student results and participation in discussion boards.

Joksimovic´, Gaševic´, Kovanovic´, Riecke & Hatala (2015) examined the relationship between social presence (based on Garrison's (2011) indicators) and academic performance i.e. the final course grade, concluding that indictors such as continuing a thread and complimenting or expressing appreciation were significant predictors of academic performance. They further implied though, that cognitive presence might be a more dominant predictor of academic performance. This suggests that investigation into the kind of relationships present and the nature of the posts themselves is warranted, and if there is indeed evidence that participants are creating an online learning community that collaborates in their own knowledge construction.

Defining a community of learning

Learning communities can be defined as, "a group of individuals who collaboratively engage in purposeful critical discourse and reflection to construct meaning and confirm mutual understanding" (Garrison, 2007 p. 62). Yuan and Kim (2014) add that online learning communities give members a sense of belonging, where

ideas, values and beliefs are shared and mutual trust and respect are fostered. Sadera, Robertson, Liyan Song, and Midon (2009) defined community as "a group of participants, relationships, interactions and their social presence within a given learning environment", (p278). Garrison (2016) claims a community "provides conditions for participants to exchange ideas, sustain discourse, collaboratively construct meaning and validate knowledge" (p54). What is common to the ideas noted above, and a definition that is considered pertinent to this research, is that a learning community is a cohort of people engaged in collaborative, purposeful, learning through interaction and relationships. It has long been believed by some that learning communities are vital to student success (Harasim, 2002; Palloff & Pratt, 1999). Ryman, Burrell, Hardman, Richardson & Ross' research, (2010) showed that learning communities encourage critical discourse and also personal transformations. The use of technology extends the reach beyond just the face to face interactions.

Evidence of a learning community

According Flynn and La Faso, online forums can best be described as conversational modes of learning that "lead to enhanced learning such as increased motivation and engagement in learning tasks, deeper levels of understanding, the development of higher order thinking skills and divergent thinking" (as cited in Naughton, Dolan & Robinson 2009, p.16). It should therefore be possible to identify this in a collection of online conversations as evidence of the existence of a learning community. Garrison (2016) considers a functioning community is "expressed by reflection and discourse (thinking collaboratively)" (p.54) where learning is a process of inquiry, a collaborative constructionism. This suggests a balance between "the cognitive and social demands of an educational experience" (p.55) as learners collaboratively construct meaning and validate understanding. Crosta, Manokore and Gray (2016) used interviews and an audit of interaction patterns in a series of online groups to establish if a Community of Inquiry Framework [CoI] (Garrison, Anderson & Archer, 2001) was present which would indicate an authentic online learning community. The students reported cognitive and teaching presences, but considered the third presence, social, to be less evident. Peacock and Cowan (2016) have further expanded the CoI model to consider the interweaving of the three dimensions – which they call Influences – which harness the "joint potential found in the two Presences, with appropriate support from the third Presence" (p.272). Khoo and Forret (2015) examined a semester long online forum and how the students came together to support each other's learning through active participation and diverse interactions to develop shared understandings. They stress that participation (development of relationships and identities) differs from interactions, which "emphasises the mutual reciprocity between people via the type of dialogue occurring to

serve particular purposes" (p.234) which can be intellectual, emotional or social needs. They did not though consider the knowledge building aspects in their research. The research approach discussed in this paper, considered both the social and cognitive (knowledge building) aspects displayed by students in their online posts.

Methodology

The research questions sought to find if there was a relationship between engagement in the assessed discussion forums associated with postgraduate courses and the student's final outcomes of the course, and, secondly, if there was evidence of a learning community to be found by analysing the social and cognitive contributions of selected distinction graded students in the discussion forums. The project adopted a mixed methods approach utilising both quantitative and qualitative data.

The quantitative aspect compared the results of all 820 students across three years of postgraduate online courses. Assessment for these courses comprised three items. Regular participation on the forum for the 12 weeks of the semester was expected and was graded for both number and quality of post (adding value to the community, engaging with the readings and each other) and constituted 20% as Assessment one. This grade was compared with the results of the two remaining (written) assessments, one midway in the courses (35%) and one at the end (45%) making up the rest of the final mark. Regression analysis was applied. The results are included as *Figure 2*.

Over 800 discussion forum posts by students who had highly successful course outcomes in their online courses were then purposefully selected from the data for further, qualitative analysis. Drawing on the work of Hughes, Ventura and Dando (2007), (who remodelled Rourke et al's 1999 rubric) for aspects of social elements, Swann and Albion's (2013) work on a caring dialogue and adapting Garrison's Community of Inquiry cognitive elements, a matrix was developed to investigate the presence of a learning community, indicated by both social and cognitive aspects in the actual posts from students who received distinction level outcomes for their courses. *See Figure 1.* The postgraduate students were tasked with academic discourse (rather than structured problem-solving) each week in the assessed discussions, and the project focused on student contribution alone for the signs of a learning community. A subsequent project will examine the teacher contribution.

The **social activity** discourse codes included **affective** features such as expressing emotions or empathy, use of humour and self-disclosure. **Interactivity** included agreement, appreciation, asking questions of one another

as well as softening statements by hedging. The highest category in this aspect was considered to be referring directly to others' messages. **Cohesiveness** was indicated by the use of names and the group as a whole was considered inclusivity.

Cognitive activity ranges from simple **exploration of ideas** or information exchange, to **adding value** by sharing an example, **integration** (connecting ideas from posts or readings - synthesis) with the higher order skills such as **evaluation** (evaluating viewpoints, or giving opinions with evidence) and **application** (applying new ideas or reporting back on trials of them in practice) deemed more significant. It is possible for one student post to have evidence of all four code categories, but higher order codes would supplant lower order ones in the same category, in the coding. Analysis of this data is still in progress, with paired coding, cross sampling and course comparisons (early course forum contributions vs later courses) yet to be completed.

Figure 1: Presence of a learning community (Adapted from Hughes et al, 2007; Swann & Albion,2013; Garrison et al 2001)
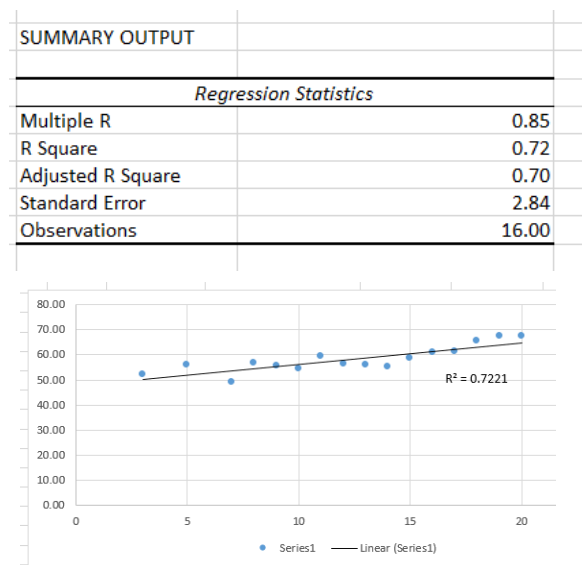
Category		Indicator	Definition	Criteria	Example	Keywords
Social activity						
Affective	A1	Expression of emotion, empathy	Conventional or unconventional expressions of emotion: Words, punctuation emoticons	Direct reference or word Use of emoticon Use of punctuation for effect	I enjoyed studying Happy sharing and learning Excited about sharing Sorry everyone That sounds awesome! What a shame	Scared Sorry Pleased Happy Nervous Excited
	A2	Use of humour	Joking, understatement, sarcasm	Deliberate use of humour emoticon	I can't open the PDF.... Lol that would make going to work every day easier hahaha	Ha ha LOL ☺
	A3	Self-disclosure	Revelation, confession or admission	Reveals emotional state without naming it,	I am still trying to understand the reading but… Would it be fair to say that	Trying Suggest Actually finding
Interactive	I1	Expressing agreement	Agreeing with each other, with content		I agree…….That's what I mean! I totally understand what you are saying	
	I2	Appreciation	Complimenting the point made		Thank you for your post It was interesting and got me thinking Very well said……..Good question	
	I3	Asking questions	Of each other		Do you mean...? Did you feel …?	
	I4	Hedging	Tentativeness	Avoids certainty, offence	I think….I don't think I wonder if…… I hope To make sure I understand you Can I just add, Just a question but…	Think Wonder Can I
	I5	Referring to other's messages	Reference to previous posts Quotes from previous posts		I tried to give you different perspectives I understand your comments on… Interesting to read about the teacher you mentioned	
Cohesive	C1	Addressivity	Using names, salutations, signoffs	Using the name in the paragraph	But as *name* said.. As *name* has mentioned	
	C2	Group inclusivity	Addresses the group as a whole		Lucky us Shall we.. Sorry everyone …Hi everyone	We us our
Cognitive activity						
	CA1	Exploration of ideas	Info exchange Speculating Questioning Quotes – relevant but no explanation		As teachers we always reflect.. Very true what you have said about…also another addition is What I am trying to point out is….	
	CA2	Adding value	Sharing pertinent examples from experience	Example only shared, without lesson learned	It reminded me of… On the other hand when..	
	CA3	Integration	Connecting ideas from other posts/readings		Another thing to consider is Similar to name's post…	
	CA4	Evaluation	Evaluation of viewpoints in readings/posts. Opinion with evidence		Like what is stated in *reading*, about… As *reading* states, " quote" this reinforces that… I have noted that ..and I found it really hard to apply these..	
	CA5	Application	Applying new ideas for real or in reflection Reporting back	Example with strategy, hindsight, what worked what didn't.	This made me realise that I have found a better way to.. Everyone can get affected, just this week….what it shows though is…..	

Preliminary results

Quantitative analysis of over 800 student results, over three years, for all courses for the three assessments in each course of the program has been completed. Figure two below shows a summary of the regression analysis which was applied.

Initially the spread of all marks achieved by students in assessment one (out of 20) were plotted against the 80 possible marks for the other two assessments, for every course in the program. Then the **average** total mark achieved by all students in all courses for assessments two and three was calculated for each point of the 3 to 20 possible marks achieved for the discussion forum assessment (# now16). The data show a high correlation. There is a positive relationship between the independent variable (the score out of 20 in the forum assessment) and the dependent variable (the score out of 80 for the other two assessments). 85% of the time, a student who achieved a high mark for assessment one, the discussion, also achieved a high mark for their other two written assessments.

Figure 2: Regression analysis

SUMMARY OUTPUT	
Regression Statistics	
Multiple R	0.85
R Square	0.72
Adjusted R Square	0.70
Standard Error	2.84
Observations	16.00

This analysis shows that those students regularly posting on the discussion forums and having quality engagement with the content as well as frequent interaction with their fellow students and who therefore scored well for assessment one, performed better overall in their remaining two assessments. Whilst only one factor in the student's overall final grade, engagement can be used as an indicator for overall achievement. This tends to suggest that active participation in an online community at postgraduate level does have a flow on effect to student outcomes. What is actually in evidence in terms of both social and cognitive contribution in those online communities will be revealed better by the proposed qualitative analysis.

Investigation into the nature of the social activity and cognitive activity in the anonymised posts from highly successful students from two selected postgraduate courses is as yet only partially completed. Trends are emerging however. Higher order codes in the cognitive activity categories (integration, evaluation and application) appear to be more present in the forums attached to courses which feature later in the programme than in those that students tend to take early in their programme. This suggests that richer cognitive contributions are made as the community matures. Social activity though appears to be more consistently spread. Both aspects being present however suggest that highly achieving students are engaged in relationships, exchanging ideas, and are participating in purposeful, collaborative learning, which may also contribute to their overall success.

Conclusion

Results of this study already reveal that being able to engage in critical discourse and reflection, exchange ideas and collaboratively construct knowledge through discussion forums at postgraduate level allows students to achieve better by working together. There is a correlation between contributing well to online discussions and a student's overall achievement in a course. The exact nature of that interaction and further proof that a learning community exists and contributes to student success is still under investigation. However, the positive relationship shown between the forum assessment result and the outcomes achieved in the other two assessments in our courses confirms that engagement does make a difference. This is the power of *Us*.

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