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Co-creation and online learning: A case study of online discussion boards at an English business school

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Keywords: Co-creation; Communities of practice; Online discussion boards; Collaborative learning; Business School

Introduction:

Increasing growth in global competition in the higher education landscape and the complex nature of other changes in the academic environment over the last 10 years has led to universities being in a continuous state of change with restructuring being a major element of the change process. A central aspect and key element of this restructuring has been movement away from tutor directed learning to greater emphasis being placed on students' ownership of the learning process. In this new paradigm of learning, in order for students to benefit and thrive throughout their learning experience they now find that they need to embrace a new set of learning skills. This investigation set out to address three key research questions. Firstly, how do students approach using discussion boards? Secondly, how is knowledge creation viewed by students? Thirdly, to what extent do students identify with being part of a collaborative community of practice? In particular, this research exercise sought to explore how discussion boards are valued and utilised by a range of international students enrolled on study programmes at an outreach centre of a post-1992 university, located in London.

Exciting opportunities for innovative approaches to the delivery of study programmes are increasingly being adopted at Business Schools. This paper aims to explore the opportunities for collaborative learning through the use of discussion boards and, in doing, promote the development of a community of practice. Discussion boards enable participants to engage in a collaborative form of knowledge transfer. In this sense, discussion boards are the outcome of a co-creation exercise in which academics and students participate in an 'asynchronous interaction' (Al-Jeraisy, M.N., Mohammad, H., Fayyoumi, A. and Alrashideh, W., 2015, 247). The concept of co-creation has attracted much attention since Prahalad and Ramaswamy published 'Co-opting customer competence' in the Harvard Business Review in 2000. Originally conceived as a marketing concept and a method of eliciting the positive contribution of a supportive customer base, the concept has since been adopted by a range of disciplines to describe the changing boundaries between producers and consumers in the postmodern age. In essence, the adoption of co-creation in this paper aims to overcome traditional boundaries by establishing new communities based on the sharing of ideas and common values. In this respect, co-creation echoes much of the work on communities of practice (Lave and Wenger, 1991) and collaborative learning. This paper offers a number of recommendations on how to promote more effective use of discussion boards as a medium for collaborative learning.

Literature review:

In their analysis of contemporary markets, Prahalad and Ramaswamy (2004, 5) identify an apparent paradox in that although producers generate ever greater range of options for consumers, they find it difficult to differentiate themselves in the market place. The fundamental challenge that confronts organisations then is how to set themselves apart from their competition. The proposed solution presented by Prahalad and Ramaswamy (2004) is to re-evaluate the traditional market relationship and the nature of exchange between producer and consumer. Their analysis is predicated on the idea that the market is separate from the process of value creation; consumers simply purchase an outcome of the thought processes of the producer organisation and do not participate in the design process. The solution is then to be found in the redefinition of the traditional market environment and the relationship between producer and consumer. Although this generic modelling of exchange was originally conceived in relation to the transfer of products and services, it could as easily be applied to the transactional nature of Higher Education (HE) where universities design the learning experience for students.

The enactment of the 1992 Further and Higher Education Act has led to a fundamental restructuring of the university market, and which has been typified by two dominant features. The first, is the 'massification' of the British HE system with an substantive increase in those obtaining an undergraduate degree from 77,163 to 350,800, and those attaining a postgraduate degree raising from 31,324 to 194,270 between 1990-2011 (Bolton, 2012, 20). The second is the shifts in the various funding streams that finance universities, partly as a consequence of devolution and, in part, attributable to the offloading of the payment of tuition fees to students. These changes have not only led to a fundamental reappraisal of the curriculum but also of how universities deliver teaching and learning to an increasingly diverse student body. For Barnett (2003), the challenges that confront HE constitutes a form of 'supercomplexity' in that there appears no obvious solution to the imperative of reconciling academic integrity, consumer responsiveness and political agendas. The historic diet of lecturer-based didactic learning methodology that typified the traditional university experience is increasingly coming under scrutiny in a marketised environment, as universities look to enrich their students' experience of study with greater variety in teaching and learning. Trowler (2005) offers a response to supercomplexity that is based upon the call for a 'sophisticated understanding of the nature of universities as social institutions'. This socio-cultural perspective can be supplemented with a suggestion from Sachs (2001) that we look to 'collaborative cultures…. [that] provide the conditions for the development of communities of practice.' In short, universities should look to the power of communities of practice as a means of mobilising their intellectual resources in a collaborative fashion.

This transubstantiation of this paradigm is illustrated by the way this innovative concept lends itself perfectly to the learning experience of students in Higher Education (HE). This 'communitarian-morals' perspective was described by Etzioni (1988) as characterised by a complex matrix of inter-relationships between participants with a set of shared values,

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meanings and identity. Co-creation through collaboration offers us the opportunity to redefine the nature of exchange, as well as its benefits. Instead of the traditional didactic model of teaching and learning that privileged the instructor above the student, co-creation is conceived in terms of the social construction of learning through the interaction of participants.

Co-creation moreover redefines our understanding of the value chain and how we might add value collectively. For Ramaswamy (2009) 'co-creation is a productivity engine' that can transform 'human experience environments'- as such, it represents an opportunity for the transformation of the way we think, work and live with others. Co-creation also challenges the established notion of the value chain, popularised by Michael Porter (1985) in which a product or service was developed by a producer through the adding of value in each stage of the productive process. Hitherto, as Vargo (2008) alludes to value creation is undergoing a transition from the historic goods-dominant (G-D) paradigm of production to a mode that is predicated on service-dominant logic (S-D). This collaborative scenario is interpreted by Vargo (2008, 11) as meaning that 'the firm cannot unilaterally create value but can only offer value propositions (and potentially co create value)…. [in which] value creation is always uniquely and phenomenologically determined by the beneficiary. ' As a consequence, we should not only consider the nature of the relationships that underpin this process but also the mechanisms of communication that are open to participants (Gummeson, 2006), as well as its socio-cultural context.

The literature on co-creation of knowledge emphasises the importance of the social processes involved (Harasim, 2012; Haythornthwaite and Andrews, 2011; Henri, 1992; Oliver and McLouglin, 1996; Salmon 2004; Salmon, Nie and Edirisingha, 2010). Whereas, Henri (1992) and Oliver and McLouglin (1996) tended to focus on the importance of the task itself and the nature of information involved, Salmon (2004) Haythornthwaite and Andrews (2011), and more recently Harasim (2012), have focussed more on the underpinning relationships between participants and the nature of social interaction within learning communities. Wasko and Faraj (2005, 38) point to the challenges involved in generating a conducive environment for knowledge co-creation and sharing: current theory and research seems to suggest that significant levels of social capital and knowledge exchange will not develop in electronic networks of practice'. Schramm (1954) offered an early insight into the nature of interaction within networks, describing a communication network in terms of transmission and exchange. This view has been superseded by models that concentrate on the complexities of multiple interaction instead of a two-way conceptualisation of messaging (Haythornthwaite and Andrews, 2011). Underpinning this discussion is the issue of how we should view a discussion board- either as an artefact, as a record of social interaction, or as an ongoing process that is dynamic (Harman and Koohang, 2005).

Aragon, Gomez, Garcia, and Kaltenbrunner (2017a, 1) note that 'different modelling approaches have been proposed to identify the governing mechanisms of the structure of the threads… often related to human behaviour' and they point to the length of a posting, the degree of reciprocity, social influences and roles assumed by participants as possible criteria

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to measure these discussion board behaviours. Aragon, Gomez, Garcia, and Kaltenbrunner (2017b) argue that the structure of the thread affects its evolution, and point two models based on the relationships between postings and their chronology. Where the discussion board is organised into a hierarchical model of interaction, postings can be traced to particular conversations as these are presented in a tree-like structure. The alternative form of structuring postings through a linear view derived from the timing of postings does not identify any relationship between postings other than chronology, and is less useful in analysing behavioural patterns. Fortunately, the discussion board used by students in this case study is hierarchical and provides some, if somewhat limited, insight into student interaction. However, as Han (2014, 119) notes, 'analysing the relationship of interaction does not enable us to examine what has been said, and what has been done by saying…. Without a detailed examination of students' behaviour and the content of the individual message, we cannot fully describe how or what interaction occurred'.

The analysis of discussion board threads provides an insight into the nature of interaction. Moore (1989) identified three types of interaction: student-student; student-instructor, and where the student accesses subject content. Although an analysis of threads may prove insightful, there are problems in drawing conclusions from the information derived. As Dennen and Wieland (2007) note, threads may not constitute full discussions, but merely represent as assortment of fragmented contributions with some postings less useful than others. Bliss and Lawrence (2009) provide a distinction between 'educationally valuable talk' (EVT) and 'educationally less valuable talk' (ELVT), and in doing raise the issue of quality, as well as quantity of postings as a measure of participation. As both Dennen (2005) and Jiang (2017, 86) recognise, dialogue is more than just posting a comment to a discussion board, it requires a meaningful interaction between individuals that relate to a common concern. The importance of dialogue underpins the discussion on the effectiveness of online forums. Bliss and Lawrence (2009) make a useful distinction between collaborative learning where roles are distributed and collaborative learning where there is a high level of sharing of information and knowledge creation.

How individuals conceive their role and possible contribution impinges on the potential effectiveness of discussion boards. For Ridings and Wasko (2010), online learners tend to gravitate towards one of three types of participant- the 'free riders', 'pay they go', and 'responders' who may adopt a 'speak' or purposeful 'discuss style', or a more limited 'speak-reply style' according to Bliss and Lawrence (2009). The analysis of threads using the categorisation of responses identified by Bliss and Lawrence (2009) may serve to provide a more informed understanding of discussion board interaction. According to Nandi, Hamilton and Harland, (2012, 7), 'the quality of discussion in online forums has been investigated and measured by several different researchers from different angles. These include tone (Grady, 2003), grammar (Edelstein and Edwards, 2002), number of words (Biesenbach-Lucas, 2003), reasoning (Edelstein and Edwards, 2002), levels of controversy (Burstall, 2000), and content (Edelstein and Edwards, 2002, Grady 2003)'. Bliss and Lawrence (2009) reported that 28% of postings related to contributing, 27% related to discussion, with 26% concerned with personal reflection on a group discussion, with 15% concerned with asking for help and 4%

related to social interaction. Much of the literature on participation, however, echoes the concerns enunciated by Wasko and Faraj (2005), for example suggest that as much as 39% of posts are ignored, and Thoms (2017) report that only 30% of postings contained positive comments. Moreover, for Ridings and Wasko (2010), there is an inherent problem associated with discussion boards. In their 'paradox of size', Ridings and Wasko (2010) argue that the larger the number of participants, the greater potential exists for 'a churn effect' caused by isolation, apathy and withdrawal. Ultimately, those who design discussion boards should aim to combine elements of personal instrumentalism with social benefits. Participants need to feel that using the discussion board supports their progress and is rewarding both in an academic and emotional context.

The difficulties associated with ensuring the flow of knowledge is long established in the wider literature on knowledge management systems (Ciborra and Patriota, 1998; Szulanski, 1996; Holsthouse, 1998). In response, Sharratt and Usoro (2003, 187) contend that 'what is required for effective knowledge management is a combined approach focused on both social and information systems'. For Sharratt and Usoro (2003) the key to success is the fostering of a sense of community amongst participants that is based on mutual trust, moral obligation and high levels of subject competence. Such an approach presupposes that participants perceive a discussion board as a public good rather than a private commodity (McLure Wasko and Faraj, 2000, 156), and draws from social exchange theory (Thibaut and Kelley, 1959; Homans, 1961) and the nature of relationships. The issue of how knowledge is viewed is critical to an understanding of how knowledge transfer may be promoted successfully. McLure Wasko and Faraj (2000) note that 'people are not necessarily willing to share all types of knowledge (Constant, Kieseler and Sproull, 1994), and organisational culture, not technology, has a greater impact on whether people exchange knowledge' (Orlikowski, 1996). One of the key determinants of behaviour is its social context and, with this, the value associated with individual action. Researchers have identified the proprietary nature of knowledge as an important factor in the approach assumed by individuals (Wenger, 1998; McLure Wasko and Faraj, 2000), and Eysenbach and Till (2001, 1104) pose the question of whether discussion boards should be regarded as public spaces or private rooms. In their contribution to this debate, (McLure Wasko and Faraj, 2000, 156) differentiate between three perspectives on the propriety of knowledge. The first perspective sees knowledge as residing in organisations rather than individuals and seen as a private good available only to authorised staff within an organisation. The second views knowledge as residing in human beings as a possession, and held as a private good by that individual. The third position regards knowledge as community-based and held collectively as a public good. It therefore follows that in order to maximise participation in discussion boards, knowledge should be viewed as a public resource not only to be exchanged, but also owned by the community.

A community of practice is a special form of human organisation with a defined purpose; it can be distinguished from a team or a formal organisation, and it possesses certain characteristics which make it ideal to support asynchronous learning. According to Wenger (1998, 2), a community of practice is defined by three dimensions: what it is about? How it functions? What capacity it has produced? However, as alluded to above, the relational and

values bases are key to understanding why community of practices exist. As Jagasia, Baul and Malik, (2015, 1) describe, 'community of practices are the social tools to connect, engage, and share knowledge'. There are a number of questions that should be addressed when contemplating how to construct an online community of practice, not least the protocols involved in establishing a community of common interest. For Sharratt and Usoro (2003, 188): for online learning communities to maximise their value in knowledge management terms, practitioners need to understand the mechanisms and processes that underpin members' decisions to share what they know'. A number of studies have reported on the key factors for the success of community of practices (McDermott, 2000; Macpherson and Antonacopoulou (2013); Saint-Onge and Wallace, 2003). Macpherson and Antonacopoulou (2013) reduce the range of factors to three key issues: the impact of leadership and governance structures, the meanings attached by members to their participation, and a sense of identity and belonging. All three imply the need for a considered and constructive approach to the management of community of practices by their supervisory, leader-agent.

**Figure 1. Co-Creation: The WHAT for Value Creation in Learning
(Modified from Ramaswamy, V., and Gouillart, F. (2010)**

Discussion boards are part of a raft of innovations in Technology Enhanced Learning that can be applied in a variety of forms to promote learning. Research on the use of smart phones to teach Chinese (Wong, Chen and Jan, 2011), PebblePad+ to administer undergraduate dissertations (Stoten, 2016) and web 2.0 media in the development of learning communities (Lewis et al. Lewis, Pea and Rosen, 2010) all point to the benefits of integrating Technology Enhanced Learning into the pedagogical approaches adopted by HE across the globe. Xia, Fielder and Siragusa, (2013) report on the benefits of using discussion boards, as opposed to other Technology Enhanced Learning platforms. According to their research, Xia et al. (2013) report that there are seven principal roles associated with the use of discussion boards (see Figure 2 below).

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Figure 2. The beneficial roles of discussion boards in promoting learning in a community of practice (Xia, C., Fielder, J. and Siragusa, L., 2013)

Discussion boards have become an essential tool for the delivery of online study programmes, such as distance learning programme because they 'offer great pedagogic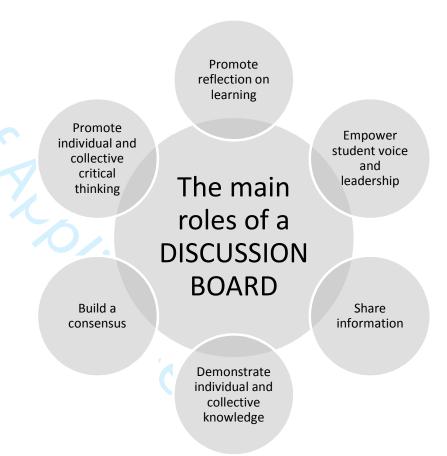al leverage, for example, by promoting reflection, analysis and high-order thinking' (Al-Jeraisy et al., 2015, 257). Although Krentler and Willis-Flurry (2005) amongst others report on the benefits of using discussion boards, Al-Jeraisy et al, (2015, 259) draw attention to 'simply obligating students to post comments does not result in higher-order thinking, meaningful content, or continued interaction without the incorporation of reflection, blend, and application in the student posting process'. Ultimately, the educator must be able to devise a more holistic conception of teaching and learning in which the discussion board is a constituent component.

According to Wenger (1998, 3), 'because membership is based on participation rather than official status, these communities are not bound by organisational affiliations'. The leadership of community of practice is not necessarily pre-ordained by established organisational structures but can emerge from within community of practice. Gronn (2000) describes this practise of leadership as 'conjoint agency', in which leadership is dispersed across the community. In this respect, leadership is not an organisational quality but a community phenomenon. It is within this context, that leadership should be viewed. The concept of 'boundary spanning' can be drawn upon to develop this analysis further.

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According to Ansett (n.d.), 'Boundary spanners serve strategic roles in organisations by gathering critical information, obtaining feedback … and then interpreting and translating that information back into their organisation'. Ultimately, if the boundary spanner is effective, the process can lead to innovations in strategy, processes or products'. Those who engage in spanning established boundaries may display different roles within the community of practice. So, for example, a student may enliven discussions and provoke debate through questions that in other circumstances may be generated by academic staff, or suggest improvements in technical support. In this sense, the student demonstrates leadership because they are driving the educational journey for all. In addition to the leadership role, Ansett (n.d.) also identifies the need for a 'broker' role to reconcile participants and re-emphasise the rules of the community. In the instance where a community of practice displays low levels of interaction, and a lack of student leadership, the role of the boundary spanner may fall to the academic responsible for the management of the discussion board. Discussion of the concept of boundary spanning leads onto a wider re-appraisal of organisations as social entities and the nature of human interaction within these environments.

The ability to co-create a learning environment through interaction and the flow of knowledge is a key facility within discussion boards corresponds to an activity system. According to Gunter (2002, 134), 'activity theory has the potential to move us forward here through the interrelationship and interdependency of: instrument, rules, community and division of labour'. Although there exists an external superstructure that supports discussion boards, the internal interaction that take place organically within the discussion board could be viewed in terms of activity theory. For example, the frequency of interaction and the individual dynamics within the social network could be taken as indicators of how participants contribute to the community and, indeed, its vitality. The theoretical development of this idea of interaction as a form of productive activity has been led by Engestrom (2000) and offers a sophisticated interpretation of human interaction within a defined community context. Engestrom (2000) offers a model of activity based on five underpinning principles: that it is viewed as a collective network; it has multi-vocality and historicity, in that many individuals drive it over time; that problems drive progress; and it may evolve into a new form. Although Holzman (2006) argues that there is no consensus over what constitutes activity theory, Sannino, Daniels, and Gutiérrez, (2009) link activity theory to Soviet constructivist psychology, particularly Vygotsky (1978) and Davydov (1996), and the benefits of social learning as an aid to high level thinking. For Engestrom (1999, 29), 'activity theory has the conceptual and methodological potential to be a pathbreaker in studies that help humans gain control over their own artefacts and thus over their future'. The instance of a community of practice centred on discussion boards is an illustrative case in point. As humans learn to co-operate more effectively with each other, the opportunities that are presented for mutual benefit increase.

Garrison (2001) has offered a refinement of activity theory that is predicated on an analysis of an online community as a 'socio-technical interaction network'. Garrison (2001) argues that Activity theory places too much emphasis on the compartmentalisation of the subject [the student], object [the auctioning process] and tools [the discussion board], as well as

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communal rules of behaviour. Garrison (2001), challenges the ontological basis of the activity system, with Barab, Scahtz and Scheckler (2004) suggesting that we should focus more on the nature of interaction. For Barab et al. (2004, 28):

> 'A tool is not an independent entity but is instead a description of a subfunction or a particular perspective from which to understand the larger activity…. It is important to point out that the components of activity systems are not static components existing in isolation but are instead considered as reciprocally interacting with and reciprocally constituted through interaction with other components'.

The contribution of Garrison (2001) to the literature on Activity theory is to pose questions as to the ontological nature of components with a system, either as separate and distinct or as closely aligned and synergetic. For Garrison (2001) in order to understand how learning network work, we should focus on that transactions that take place within that socio-technical system.

Alternative models of social interaction and knowledge co-creation are drawn from a range of competing theoretical positions much of which is linked to Social Exchange theory (Brown and Duguid, 2000). In their work on sentiment analysis, Thoms, Eryilmaz, Mercado, Ramirez and Rodriguez (2017) offer a conceptual framework that combines constructivist notions of learning alongside Engagement and Social Presence theory in which social capital becomes a driver of social interaction and common purpose. In so doing, Thoms et al. (2017) challenge the idea of transactional networks, as described in Activity theory, and emphasise the communal identity in which 'knowledge contribution is a socially complex process that involves a variety of actors, with different needs and goals (Wasko and Faraj, 2005, 53). In addition to the development of a common identity and focus, Dennen and Wieland (2007, 285) argue that students must aim for intersubjectivity, where they must develop a 'shared understanding'. Intersubjectivity demands a higher level of commitment and communal identity than transactional information exchange as originally envisaged by Schramm (1954). In order to facilitate intersubjectivity educators should focus on how their community is formed and sustained. For Lee and van Dolen (2015, 952-953), 'collective sentiment is one of the potentially important affective factors that have been overlooked…. Sentiments can be affected via two pathways: primitive emotional contagion and entrainment of behaviours'. Future research should explore how educators may promote effective strategies to foster a positive sentiment within the learning community, especially where cultural factors may impact on community cohesion.

Research methodology:

In order to ascertain a preliminary insight into how student use discussion boards, a pilot questionnaire was distributed to a dozen students enrolled on a campus-based undergraduate programme. This pilot questionnaire was informed by key issues derived from the literature such as preparedness to engage with others and their technical competence. The pilot included 8 statements that were linked to a five-point Likert scale, with a comment box attached to enable respondents to provide more expansive feedback. The pilot served to sharpen the focus on the main research questionnaire, with the need to focus more on how

students identified as part of a learning community and less on their technical competence. Its findings also suggested that although collaborative learning was valued, few students contemplated using the discussion board.

The sample of 67 students is the product both of purposive and convenient sampling. As this research involved those enrolled on an undergraduate business degree at an 'outreach' centre in London that attracts students from across the globe, it was anticipated that this sample would generate a more diverse multi-national cohort than is the case with many undergraduate programmes at the main university campus. Consideration was given to the ethical and logistical implications of researching such a diverse student cohort. Once ethical clearance was obtained, an anonymised questionnaire was distributed that only asked students for their nationality. Once completed the questionnaires were despatched from the University's London campus to the University campus in Newcastle, so those analysing the responses were not involved in data collection and did not know the students involved. A subsidiary research question that arose because of the nature of the sample surveyed to explore was whether differences in the value and usage of discussion boards could be identified across regional categories. The respondent cohort reflected a range of nationalities from: China and the Indian sub-continent; Ghana, Nigeria and Congo; Bulgaria, Romania and France; and the United Kingdom. A small number of South Americans were not included in the analysis, as it was deemed too small to be of significance. In order to facilitate comparison and analysis, they were divided into four categories: Asian, African, European and British.

A semi-structured questionnaire was devised following the Pilot questionnaire that sought to elicit students' views on these three key research questions. This questionnaire was structured with 11 items, each of which 11 was attended by a Likert scale of 5 points, ranging from 'agree strongly' to 'disagree strongly', with a 'neutral/no response' option. In addition, each item was followed by a 'comment box' in which students were able to make their own comments and elaborate further on their initial response. In this way, students were able to highlight a point of interest for them and provide useful qualitative data to inform the subsequent discussion.

In relation to research question 1, the questionnaire sought to establish how students value discussion boards as a learning tool. In specific terms, the questionnaire touched upon whether the impact of discussion boards on students' approaches to studying: 'I find that using the discussion board helps with my motivation', 'I enjoy using the discussion board', and 'I feel that my academic performance benefits from the use of a discussion board'. In respect to research question 2, the items 'It is important that ground rules in the use of the discussion board be established by the online tutor' and 'I believe students would benefit from more training in the use of discussion boards', and 'It is important to share ideas' were concerned with ascertaining students' views on the organisation of discussion boards. Research question 3 placed greater emphasis on ascertaining how students defined themselves and their role when using a discussion board. Items such as 'I feel part of a community of fellow students when using a discussion board', 'I trust my peers when engaging with the discussion board', 'I believe that we all can take a lead in discussion board

conversation', 'I believe that the discussion board I the product of all our efforts, and not a single person', sought to explore students sense of community.

Findings and analysis:

The quantitative data:

The responses for each of the 11 items were totalled and a mean derived for each category, together with its ranking of categories in terms of agreement with the statement in brackets, as indicated below. In addition, the table indicates the overall level of agreement with the statement, with item 6 generating the highest level of overall agreement and item 3 indicating the lowest level of agreement across the cohort, together with its p value.

Item number	Item *(with mean response)*	Overall ranking	Asia n=25	Africa n=10	Europe n=14	United Kingdom n=18
1.	I feel part of a community of fellow students when using a discussion board *Mean: 2.3474* *P value: 0.006*	8th	1.68 (1)	3.10 (4)	2.50 (3)	2.11 (2)
2.	I trust my peers when engaging with the discussion board *Mean: 2.4225* *P value: 0.016*	9th	1.88 (1)	3.10 (4)	2.71 (3)	2.00 (2)
3.	I feel obligated to contribute when others do *Mean: 3.025* *P value: 0.05**	11th	1.68 (1)	3.60 (3)	4.10 (4)	2.72 (2)
4.	It is important that ground rules in the use of discussion boards should be established by the online tutor *Mean: 1.995* *P value: 0.549**	4th	1.96 (2)	1.70 (1)	2.21 (4)	2.11 (3)
5.	It is important to share ideas *Mean: 1.5975* *P value: 0.386**	2nd	1.56 (2)	1.40 (1)	1.71 (3)	1.72 (4)
6.	I believe students would benefit from	1st	0.98 (1)	1.50 (2)	1.64 (4)	1.61 (3)

No.	Statement	Rank				
	more training in the use of discussion boards *Mean: 1.4325* *P value: 0.062**					
7.	I believe that we all can take a lead in discussion board conversations *Mean: 1.7775* *P value: 0.222**	3rd	1.88 (3)	1.80 (2)	2.21 (4)	1.22 (1)
8.	I believe that the discussion board is the product of all our efforts, not a single person *Mean: 2.0825* *P value: 0.359**	6th	1.92 (2)	1.70 (1)	2.60 (4)	2.11 (3)
9.	I enjoy using the discussion board *Mean: 2.5075* *P value: 0.037*	10th	2.28 (2)	3.00 (4)	2.64 (3)	2.11 (1)
10.	I find that using the discussion board helps with my motivation to study *Mean: 1.9975* *P value: 0.04*	5th	2.10 (3)	2.20 (4)	1.94 (2)	1.75 (1)
11.	I feel that my academic performance benefits from the use of a discussion board *Mean: 2.2525* *P value: 0.029*	7th	1.84 (=1)	2.69 (3)	2.64 (2)	1.84 (=1)

Table 1. The distribution of responses to items 1-11, categorised according to geographical categories, and ranked according to mean level of agreement.

Given the relatively small number in the sample (n=67), it was decided to search for significant differences in the data using the Kruskal-Wallis test. This non-parametric test was chosen instead of the more commonly used Chi Squared and ANOVA tests because of their lack of accuracy when using categories with under 5 responses and uneven samples sizes across the categories. The level of significance was taken as the conventional figure of P value > 0.05, with the degrees of freedom given as 3. Those items that generated a p value > 0.05 are shown with an asterisk in the table above and imply that there was a significant degree of divergence between the views of the categories.

The quantitative data generated some interesting findings in relation to the three research questions. In relation research question 1, the data suggests that some students see only

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marginal benefits in using a discussion board. In particular, African students, appear to be the least enthused by discussion boards, and are less likely to see it as being an enjoyable and motivational activity that promotes their academic achievement. This finding contrasts with the data generated by British students who appear more attuned to the use of discussion boards. In relation to research question 2, students highlighted the need for effective organisation and management of discussion boards. The item that generated the highest level of agreement across the entire cohort identified a need for additional training in the use of discussion boards for students, closely followed by the need for ground rules. This finding was somewhat surprising; it also implies a wish on behalf of students for greater support through a regulated framework of behaviours. Although the data would imply that although most students see value in collaboration, there is less evidence to support the idea that there has been a growth of a community of learners, as is apparent in items 1, 2 and 3. Interestingly, there is a noticeable divergence between African and Asian students over identity construction, with African students less inclined to identify with being part of an online community.

The qualitative data:

The comments generated from the questionnaire echo the generally positive view of discussion boards that was evident in the quantitative data. In particular, the qualitative data highlights the challenges that accompany the goal of establishing a community of learners. Responses from students included:

> 'No, I don't feel that I'm part of a community yet…. I don't feel obligated to contribute to the discussion'.

> 'I don't feel the need to share my ideas with other students with regards to assignments'.

And, some students were concerned that discussion boards should be supervised by staff,

> 'This could help stop the board being misused'.

And, importantly,

> 'I don't trust half of what my peers write…. This is important as some people tend to sway off the topic leading everyone along the inadequate path'.'

However, most of the comments recognised the benefits that accrued from collaborative learning:

> 'Yes, feel it's quite important to share ideas. It can benefit all the students'.

> 'Encourages teamwork….by sharing knowledge we can develop further'.

> 'Because for those students struggling to understand coursework, [they] may be able to ask questions and get the answers, and other students may find [it] interesting to share their knowledge …. The board will be enhancing students' academic studies'.

And,   'It helps us to improve our English skills'.

Discussion:

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Higher Education is becoming increasingly aware of the need to raise the quality of learning delivery and the potential empowerment of students through independent, research-rich learning. Universities are developing new ways to present subject content to students that is part of a new paradigm of learning. This new paradigm of learning places the student at the centre of the learning process and re-defines the position of the academic to one that is closer to a facilitative role, rather than one which was didactic. The characteristic features of this evolving paradigm of student-owned learning are: devolving responsibility to students for the management of their learning, a commitment to innovate using new technology and new ways of sharing knowledge, and a recognition of the benefits of learning as part of a mutually supportive community.

Although the concept of co-creation may have originated in the Business literature, it is also central to social constructionist conceptions of collaborative learning. Underpinning the idea of the co-creation of learning is an implied set of values that celebrates the idea of community. In elaborating on this theme in their work on communities of practice, Lave and Wenger (1991) have sought to differentiate a community of practice from a more generalised form of collective. Johnson (2001, 45) has contributed to this refinement of the community of learners by distinguishing between virtual communities that exist formally online but do not constitute a true community of practice. So, whereas Johnson (2001) sees virtual communities as 'designed communities' that are little more than lists of participating students, 'communities of practice' grow from within the designed community as a result of deliberate interaction between participants. It therefore follows that the process of enrolment of students will not in itself lead to a community of learners. The data generated echoes this observation from Johnson (2001) as it is evident that individuals interact with the learning platform in a variety of behaviours, ranging from the highly engaged to the absent.

Addressing the issue of participation is central to success in using discussion boards. For Vuopala et al. (2016, 27), [the] socio-emotional aspects of interaction is essential in successful collaborative learning'. Jiang (2017, 86) notes that 'online learning communities are nurtured when learners increase their engagement with each other and build their sense of community…. Online learning communities can develop and be nurtured when a group of learners share the same interests or goals and interact with trust, and support each other in online settings'. Research on the social context to learning highlights the importance of a sense of community, a common identity and a shared understanding of the task in hand (Salmon, 2004; Salmon, Nie and Edirisingha, 2010; Haythornthwaite and Andrews, 2011). As Haythornthwaite and Andrews (2011) point to, online learning networks benefit from social support from peers and instructional support for the task, as well as exchanging information.

In order to foster an affective commitment to discussion boards, it would appear that academics should think beyond the possible cognitive benefits of this form of learning technology to consider how students identify with the learning process more generally. Prior to the start of the learning journey, students should be inducted into module through a social learning or an ice-breaking activity where they get to know each other and establish the initial stages of their community of learners. One possible approach to addressing this issue is implemented within distance learning programmes at Northumbria University where students are allocated to 'learning circles' of 4-6 students, ideally from different countries and direct

tasks to these circles for completion. The intention behind this form of social engineering, is to encourage students to work collaboratively and support each other; it also creates a new form of social accountability. Fundamentally, the success of any learning community is their sense of identity and acceptance of mutual support.

In developing the practice of a learning community, academics should aim to encourage students to reflect on how they interact with knowledge, and more particularly the process of knowledge creation. Whereas traditional teaching approaches emphasise the role of the teacher, the new paradigm of learning views the student at the centre of the learning journey. Within this re-positioning of the teacher-student relationship, one can also look at how knowledge creation and management are performed. Instead of being a consumer of knowledge, students are now expected to engage in the co-creation of knowledge as producers, alongside their teachers and peers. This re-evaluation of knowledge creation and transfer should act to re-cast roles and performativity within knowledge management with students accepting responsibility of the sharing of new knowledge and ideas within their community. In their discussion concerning the ownership of collective knowledge, McLure Wasko and Faraj, (2000), differentiated between organisational, individual and collective forms of knowledge. From the findings of this study, it would appear that there are differences in the way different categories of students interpret participation and ownership in the knowledge creation process. As Ardichivil, Maurer, Li, Wentling and Stuedemann (2006, 94-95) report:

> 'Studies of cognitive strategies and methods of learning and knowledge generation suggest that cognitive styles differ by national and ethnic cultures…. [there is] Growing recognition of the importance of cultural influences on knowledge management, there is a lack of related empirical research.'

Drawing on 'cultural dimensions theory', Hofstede (2001) Schunk and Usher (2013) reported on how occidential and oriental cultures impact on organisational and work cultures. This exploration of individualistic and collectivist cultures is of relevance in this research, as behaviour is conditioned by cultural norms and associated values systems. In particular, the key issues of participation, trust and obligation that underpin the operation of any community were identified as points of divergence, with African students challenging the benefits of such in an online community in contrast to Asian students. Further exploration for possible explanations of the apparently higher levels of support for discussions boards from Asian and British students should be undertaken.

Conclusion:

In bald terms, Activity theory would aim to reduce the analysis of discussion board to one of an analysis of interaction within a bounded socio-technical system. There are undoubted benefits from modelling interactions within a social system, but it has its limits. Although Activity theory offers us a view of interaction it is less effective in accounting for the variety interactions between constituents within such a bounded system. Approaching an understanding of the operation of discussion boards using Activity theory and data derived from learning analytics is useful but inherently limited. How then should we approach such an exercise?

In order to understand the nature of a bounded socio-technical system such as discussion board, we need to understand the nature motivation to use this learning tool for students. As a result, we could benefit from an exploration of Social Exchange theory. In exploring concepts such as 'communal sentiment' (Thoms et al. 2017), and theoretical frameworks such as Social Presence theory, we may gain a richer insight into the human dimension that underpins interaction. The work of Salmon (2004), Salmon, Nie and Edirisingha (2010), and Harasim (2012) have a particular resonance here. It follows that the success of discussion boards it dependent on a combination of affective-cognitive factors that vary according to the prevailing social norms and behaviours that underpin a community of learners. It is within this social context that we should focus on impact of cultural factors in influencing behaviour. This paper has touched on the issue of culture as a conditioning factor in the success of discussion boards and has posited some tentative observations that could inform the wider discourse on learning in an international context.

Once educators appreciate that developing a community of learners is not simply creating a network, but is concerned with the maintenance of an identity of common purpose then we can move forward. Ideally, we should promote an intersubjective approach amongst students where they think beyond the exchange of information but identify with the learning process itself and the benefits of collaborative learning. For Dennen (2005) this recognition of the importance of both design and facilitation of learning as an ongoing process is fundamental to the operation of an effective discussion board.

The findings from this relatively small-scale research exercise that imply Asian, predominantly Chinese, students are more prepared to engage in a discussion board than African learners. It also suggests that those British students surveyed were more positive about the use of discussion boards than European students, most of whom were drawn from Bulgaria and Romania. It is too simplistic and convenient to draw easy conclusions from such data. Whether the data reflects different levels of technological development, or indeed its take-up across particular groups, or more profound issues relating to the comparative effectiveness of national educational systems. However, the findings do suggest that educators must be more proactive in how they approach the design of discussion boards, especially where there may be additional challenges posed as a result of a culturally heterogeneous cohort. The creation and maintenance of a common identity within a culturally diverse student body may be challenging but it should be an imperative.

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