

Networked Learning ten years on: the rise of the Virtual Graduate School

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Abstract

The aim of this paper is to reflect on how conceptions of networked learning have changed, particularly in relation to educational practices and uses of technology, that can nurture new ideas of networked learning to sustain multiple and diverse communities of practice in institutional settings. Our work is framed using two theoretical frameworks: Giddens's (1984) structuration theory and Callon & Latour's (1981) Actor Network Theory as critiqued by Fox (2005) in relation to networked learning. We use these frameworks to analyse and critique ideas of networked learning embodied in both cases. We investigate three questions: (a) the role of individual agency in the development of networked learning; (b) the impact of technological developments on approaches to supporting students within institutional infrastructures; and (c) designing networked learning to incorporate Web 2.0 practices that sustain multiple communities and foster engagement with knowledge in new ways. We use an interpretivist approach by drawing on experiential knowledge of the Masters programme in Networked Collaborative Learning and the decision making process of designing the virtual graduate schools. At this early stage, we have limited empirical data related to the student experience of networked learning in current and earlier projects. Our findings indicate that the use of two different theoretical frameworks provided an essential tool in illuminating, situating and informing the process of designing networked learning that involves supporting multiple and diverse communities of practice in institutional settings. These theoretical frameworks have also helped us to analyze our existing projects as case studies and to problematize and begin to understand the challenges we face in facilitating the participation of research students in networked learning communities of practice and the barriers to that participation. We have also found that this process of theorizing has given us a way of reconceptualizing communities of practice within research settings that have the potential to lead to new ideas of networked learning.

Keywords

Networked Learning; Co-operative Learning; collaborative learning; virtual graduate school; structuration theory; actor network theory

Introduction

The starting point for this paper was our reflections on our experiences (as student and tutor) on a Masters in Education (Networked Collaborative Learning) and our current practice in the development and implementation of virtual graduate schools in two UK universities. In particular, we wish to explore the impact of the Masters programme on our approaches to pedagogy and the impact of developing technologies, especially the use of web 2.0 facilities on the design and development of networked learning in the context of a virtual graduate school (VGS). We have found it essential to draw on theoretical frameworks to inform the design and development of the virtual graduate schools as these frameworks have helped us to analyse and understand the contexts in which this work is being implemented, and therefore have aided decision making. These frameworks have also informed our understanding of the research student's learning journey particularly with respect to the development of research skills.

In the late 1990s to early 2000s, the networked learning community of both practitioners and researchers were concerned with issues of developing co-operative and collaborative learning, and also virtual learning communities (e.g. McConnell 2000 and Lewis and Allan 2005). This work was underpinned by theories of communities of practice (Lave and Wenger (1991), Wenger (1998), Wenger (2003), Wenger, McDermott and Snyder (2002)) and more recently the notion of communities has been critiqued e.g. Hodgson and Reynolds (2005) who investigate how networked learning can promote diverse ideas of community that foster participation. Individual studies often focused on specific programmes or modules and explored individual, group or whole cohort experiences over sustained timescales e.g. McConnell (2006). While this type of research continues today and provides helpful insights into networked learning practices, there is an increased interest in supporting multiple communities of students whose research interests are individual but who operate within a complex set of research relationships where collaboration may be formal and extended or informal and short-lived or non-existent. Consequently, our focus in this paper is the support of postgraduate research students through a virtual graduate school.

Masters in Education

The Masters in Networked Collaborative Learning began in the late 1990s and was designed to introduce participants, who in the main were professional practitioners, to the theory and practice of Networked Collaborative Learning. It was a two year part-time, postgraduate programme which emphasised ‘the implementation of innovatory on-line practice by creating a supportive and creative online research learning community where participants could feel free to experiment and “learn by doing”, while constantly holding a critical perspective on their practice and the theory underpinning it’ (McConnell et al., 2000, p.220). The underpinning pedagogy was based on social learning theories and, in particular, co-operative and collaborative learning activities which were embedded in the assessment activities. The exception was the thesis which students completed as an individual activity. The course was designed for collaborative learning within an institutional Virtual Learning Environment for and the principal feature of its learning design in relation to, tasks and activities was group-based to achieve advanced knowledge construction based on computer mediated communication (CMC). There were limited resources made available, as the basis of learning was computer based collaborative group work (CBCGW). The course was asynchronous and each course group was facilitated by an online tutor. There were particular timeframes associated with course activities and outputs that were assessed, leading to a Masters qualification.

Virtual graduate schools

The authors of this paper have been directly involved in the development of two university virtual graduate schools in the UK. Currently in the UK, the development of research and employability skills for research students is high up on the agenda of universities. This need was articulated in the Joint Statement of Skills Training Requirements of Research Postgraduates (2001) produced by the UK Research Councils. Concurrently, the UK government commissioned a review to investigate the supply of people with science, technology, engineering and mathematical skills (i.e. the STEM subjects) and this resulted in the Roberts report, SET for Success, in 2002. The report recommended additional professional and personal skills training for doctoral students and also postdoctoral researchers and this was funded by the UK government from 2003 through what is often referred to as Roberts funding. This funding helped to support initiative such as VGSs. As a consequence, many universities have developed online content to support research training that often consists of a number of generic learning objects that are not specific to any area of research. It is not easy to align these resources with individual trajectories of students who are learning to become researchers. This online content is often accessible via an institutional VLE and this means that it is presented in linear and hierarchical ways that do not necessarily promote engagement with neither research nor present research as authentic practice.

This paper presents a study of two institutional Virtual Graduate Schools at the University of Hull and the University of Sheffield. The Hull VGS was established to provide research students with an accessible learning resource which they can return to as often as required during their research journeys. In particular, the virtual resource facilitates knowledge transfer from successful students and researchers to those with less experience.

The knowledge gained during the PhD journey is often disseminated across a narrow subject field and much of the ‘messiness’ and complexities involved in the research process is lost as it is written up for publication. The Hull VGS provides multi-media resources contributed by current and former PhD students and academic staff showing what to expect during the PhD experience. A particular feature of the Hull VGS is the reflective videoclip narratives of aspects of individual research journeys. All resources are grounded in the experiences of PhD students and early career researchers. In addition, the Hull VGS provides opportunities for online discussions and social networking to encourage communications between research students across the university.

The Sheffield VGS shares common aims with the Hull VGS and has many similarities in the flexible use of resources and multimedia but makes use of a research framework that has been developed through earlier projects and which has been used to build research narratives as a form of pedagogic discourse that can be used as a learning journey through which the student moves from novice to expert. It builds on the idea that researchers learn from other researchers through both formal and informal processes. The research framework takes account of the researcher’s perspective by exploring key methodological questions associated with their work. They can engage with the video narratives as a series of 3-5 minute clips in high resolution alongside PowerPoint slides and a transcript, and also be supported by accompanying tools and resources. The multimedia resources can be personalised to the individual interests of students by use of a search tool, and can also be localised for use by teachers in flexible learning contexts. The video narratives have been produced in house as streamed video and can be accessed either through the VGS website or via the institutional VLE. The video narratives present personal ‘stories’ that have an impact in creating both emotional and professional connections within a community of research practice that it is hoped are helpful to student in building their research identity.

Theoretical frameworks

Developing a virtual graduate school has presented us with both theoretical and practical challenges, as we wanted the VGS to help students to become researchers, and we therefore wanted the VGSs to be more than just repositories of resources. This meant acknowledging that there is a ‘pedagogy’ (or learning theory) of research training that could be used to inform the design of a virtual graduate school and the two theoretical frameworks outlined here have helped us to illuminate the meaning of that.

Giddens structuration theory

Giddens’ structuration theory attempts to bridge the concepts of structure (the idea that society is a system of relationships that determines the actions of individuals) and agency (the idea that the actions of individuals lead to the creation of society). Giddens (1984) suggests that structure both constrains and enables agency, and that structure and agency cannot be understood separately of each other. Thus Giddens defines structure and human agency as a duality in which both are mutually dependant and recursively related aspects of social systems. Giddens defines three dimensions of structuration that explain how people make sense of the social structures and act accordingly, and how social structures emerge from these actions (see Figure 1): the “Interpretive Scheme” represents the stock of knowledge that help actors make sense of their interactions; “Norms” dictate whether conduct is appropriate or not within a community; and “Facilities” (or resources) are used by people to accomplish their desired outcomes.

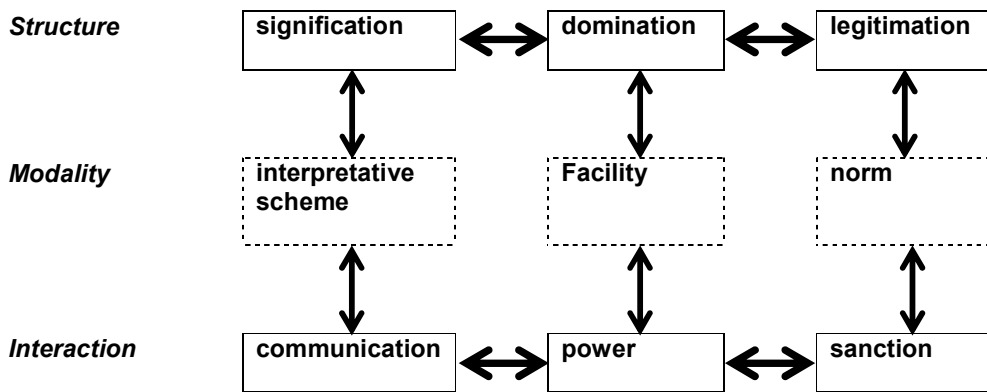


Figure 1. Dimensions of the duality of structure
 [Taken from: Giddens (1984).]

Actor-network theory

Actor-networked theory, based on the work of Callon & Latour (1981), helps us to address the complexity of building communities of practice within an online environment and to think about new meanings of community. Actor-network theory focuses on interactions between people, processes and technology and acknowledges that ‘agency’ exists in all of them in non-hierarchical ways. According to Law (1994) all agencies, whether human or non-human, are subject to engagement in social processes or networks but agencies also have individual needs which can be interpreted and met with one ‘solution’ (Latour, 2005). It is significant that agency is attributed to process and technology as well as people, which means that technology can be considered as having agency in networked learning. Fox (2005) critiques actor-network theory in order to develop ideas of networked learning communities that have meaning for both institutions and for individuals who can choose which communities they can participate in. These new ideas of community offer the potential for transformative change in education because of how they can be used for informal participation that is free of hierarchies. Fox (2005) highlights the fact that actor-network theory covers both the material and human elements of networks and provides reasons for how networks of communities grow or contract. Consequently, networked learning has the potential to move outside institutional control and does not need to necessarily be facilitated by teachers but it is still contestable what meaning it has for participating in a community within higher education structures.

Methodology

This study is an interpretivist one, and it focuses on the reflections of three practitioners, plus extensive consultation with staff and students, literature reviews and analysis of our existing projects as case studies. This work has identified a need for more flexible approaches to research training, particularly for internet-based materials but that sustainable approaches are needed (Banks & Joyes, 2010). Although our research is at an early stage, we are also drawing on empirical data related to student experience from this and other projects and this analysis has informed our approach to design of the VGS. For example, Joyes & Banks (2010) in the V-ResORT (Virtual Resources for Online Research Training) project analysed feedback from student users to provide evidence that internet-based materials can be useful at all stages of the research process.

Findings

The role of individual agency in the development of networked learning

Structuration theory helps to identify some important differences between the MEd and VGSs. The MEd was developed and implemented by a programme team using traditional higher education teaching resources and the interpretive schema of these individuals, which highlighted social theories of learning, dominated the programme design with the exception of the dissertation where traditional university norms resulted in an individual piece of work.

In contrast, both VGSs were developed using interpretative schema which included both social and also individual theories of learning. The use of external resources, such as Roberts Funding, meant that VGSs were influenced by external agencies such as institutional graduate schools. This meant that the interpretive schema of the development teams were influenced by external stakeholders. In addition, as the concept of a VGS is relatively new and there is relatively little existing knowledge and practice about them then individuals (designers, tutors or supervisors, and students) and organisations (design teams, departments, faculties and universities) have not internalised a set of standard norms concerning either their development or implementation. In both the Hull and Sheffield VGS, the project teams had to work hard to gain approval (legitimation) for their development and continued life. This led to an evolution of agency from a pedagogy that was defined by tutors and involved students and tutors in community learning activities in the MEd, to one that was tutor defined but student directed in the VGS.

Actor-network theory gives us an understanding that the role of individual agency was very different in the MEd compared to participation in the VGS. The community in the MEd was determined by the course design and the action of the tutors, thus by its nature the students were required to form community networks (chosen by tutors) to carry out the action of the course. The form of the learning community did not necessarily have a relationship to the virtual learning environment being used. At that stage, virtual learning environments were still fairly new and had not really adapted to social constructivist methods of learning. By contrast, the development of a networked community in the VGS is not an essential requirement for participating in learning and communities of practice, though it was a desirable outcome from both a funding and skills acquisition perspective. The project teams found that it was hard to encourage the students to form networks outside of their subject groupings. The decisions the students took was therefore to maximise the success of their research through individual actions even though they often recognised that by contributing to the VGS then this would also help them to develop their knowledge and skills. There appeared to be a tension between individual working and also contributing to the wider community. Both VGSs appeared to be an optional extra rather than embedded in the research process. This is not surprising as the research supervisors will have experienced individual doctoral research journeys but not experienced working within a wider community supported by a VGS. Evaluation of the student experience of both VGSs is still ongoing.

The issue of applying a VGS as an ‘optional extra’ is a significant one in the perceptions of both students and staff. Our consultations show that many staff are entrenched in their views that research training is a best secondary to the student’s research. Some students, particularly home, non-fee paying students, are similarly dismissive of opportunities and firmly believe that the individual production of a thesis is the first step towards an academic career. In order to overcome these entrenched perceptions, a VGS must deliver a distinct value proposition, which has a clear benefit to the research process. One particular benefit that students have praised is the nature of an online environment particularly when they are experiencing a ‘crisis’ moment. Students often experience ‘crisis’ moments during their studies, examples recounted to us include periods: just after fieldwork; whilst away from the campus; and in preparation for the viva. These moments often happen outside normal staff availability, so the opportunity to get advice from staff and peers holds significant value. At such times we have observed that the VGS has significant agency to improve student outcomes. Our challenge is to motivate the students to interact with the VGS outside these times to improve the quality of the material when they most need it.

The impact of technological developments on approaches to supporting students within institutional infrastructures

The concept of a VGS has developed as a result of a number of drivers including: the need to support research students and encourage them to complete their degree; the need to provide students with access to a community where they may share ideas, experiences and expertise; the recognition that there may be research students in different faculties and departments who are grappling with the same methodological issues as their peers in other parts of the university and welcome the opportunity to share their experiences and ideas; the benefits of capturing and sharing the experiences of researchers (including students, contract staff, and academics); the need to support and provide flexible research skills training; the availability of virtual learning environments and online tools including Web 2.0 facilities.

Behind the development of a VGS, there is often the recognition that the research student experience is a very individual one and that some students may work in isolation and find it difficult to become part of a research community. This may be because there are small numbers of research students in their department or faculty, they may be a distance research student, or they may be working away from their campus e.g. carrying out fieldwork. It is also because beginning research can often be problematic for students. Wenger (1998) acknowledges that the reification of knowledge provides a barrier to those new to a discipline when he states that 'there is a pedagogical cost to reifying that requires additional work – even possibly, a new practice – to make sense of the reification'.

The idea of developing a virtual community with access to discussion groups is an attractive one as it suggests that it may be possible to develop online communities of research students and staff. In addition, research students in different departments or faculties may be working on the same methodological issues e.g. research students in education and also management may be using an action research approach to their work, or students in gender studies and leadership may be using discourse analysis. Following actor-network theory a technological solution would provide agency to enhance researcher networks throughout the institution. The idea of enabling students from different departments and faculties to work together suggests that these students may learn from each other by sharing resources and ideas and is necessary in the sense that in a small research group there may not be other researchers present who are using the same techniques. Research students learn most effectively from other researchers and are put off by reified linear representations of research and the complex language used. However, we believe the meaning and practice of these types of learning communities is very different from the learning community developed within the Masters programme.

The idea of the Virtual Graduate School is to create online resources and tools within a defined pedagogic framework that engage and support research students and that facilitate the creation of social networks and formation of online communities of interests. This is a way of supporting students from diverse backgrounds who may be isolated that helps with the process of becoming a researcher in authentic ways. Communities of interest are more informal and short-lived than communities of practice and do not require specialist learning design or facilitation. We also believe that the use of multimedia technology, particularly visual methods, in itself nurtures a community and development of an identity within a community that can enhance learning activity, for example by enabling synchronous meetings.

So far we have been unable to establish opportunistic synchronous meetings due to the fairly low turnover of students visiting the VGS. In the Hull VGS a very small percentage of the research student population visits the site on any single weekday. This gives little opportunity for opportunistic interactions to occur other than a synchronously. This does little to establish the community so there is a need to arrange for scheduled meetings.

Designing networked learning to incorporate Web 2.0 practices that sustain multiple communities

The Masters programme was developed in the late 1990s and it used a virtual learning environment with basic communication tools e-mail, discussion boards and chat rooms. The functionality of the VLE constrained the organisation of the site and hence the community learning experiences with tutors (and students) as they had few choices about how they could develop and use the technological facilities. It is perhaps an example of where institutional agency and the functionality of the VLE limited the agency of individual tutors and students. This is

in contrast to the VGS which utilised current technologies. The Hull VGS used basic Web 2.0 technologies to enable interaction. Students as well as teachers were able to post videos and comment on them on a blog. The initial set of videos were made by staff members, and encoded as flash videos. The Sakai blog tool was used and the videos were uploaded to the Sakai resource folder before they were embedded in the blog posts. This enabled form of interaction led, in the main, to the students entering a passive learning mode, simply watching the videos. We later expanded the Hull VGS to create a more advanced tool that involved the users automatically, and we planned some ideas to kick start a discussion. We added a Javascript program to the Sakai blog tool that could be installed without making changes to the server program, thus allowing any instructor to add it. The Javascript program saves data to the WebDAV system which is part of Sakai. The Javascript program asked the students to opt in to a feature which tracked which videos they viewed on the site. It then annotated the video blogs with their name and kept a log of the viewed video blogs for the student to revisit. In other words, the facilities available to the project team of the Hull VGS enabled them to design and develop a VGS that matched their notions of pedagogy with respect to research students' learning processes.

Whilst the Hull VGS has had some success, around 50% of registered users have accessed the site, it has led to little student to student interaction. The reasons behind this appear complex but discussions with students have led to the identification of some important drivers including issues of authority, safety and value. Perhaps the most important issue is that students are concerned about the authority of the material, to the point where they question the significance of any contribution they can make. This is compounded by the fact that they don't know the other participants and worry about their safety (of research ideas and concern about public humiliation). The pressure they are under to research and produce outputs means they attach high value to their time and don't want to waste it. We suspect, but have yet to confirm, that training that repeatedly enforced the need to assess the authority of their research sources leads to the first and the last is caused by the expectations of supervisors (who potentially could read their contribution). When contributions are facilitated in person these can be overcome, but at this point we must question the value of an online environment.

The Sheffield VGS started off using its institutional Virtual Learning Environment (Blackboard) as its learning platform, but has reconsidered its use of technology as the pedagogic process of designing content and resources has evolved. Blackboard was originally seen as the appropriate platform because the Sheffield VGS was offering online learning modules that were 'taught'. In the light of user feedback and evaluation from related projects, this is now seen as restricting the aims of the VGS by limiting access. There were also issues about the use of streamed video in Blackboard and where it could be safely hosted within the institutional infrastructure. As with the MED programme, described earlier this is an example of individual agency being limited by the functionality of the VLE which is owned by other stakeholder. Consequently VGS content is now being offered in two ways: firstly as taught online modules, and secondly, where possible the content of online modules is being reused in the VGS website which is being made available to staff and students, though the initial rollout is restricted to Social Science departments. Users engage with streamed video narratives as a series of 3-5 minute clips in high resolution alongside PowerPoint slides and a transcript and can also be supported by accompanying tools and resources. The user can search the VGS website by key word and personalise the content to their research interests and download tools and resources, including key texts, web resources, doctoral theses, project reports etc that are available as a wraparound. The search engine provides easy access to resources that becomes an individual learning pathway through the resources. This learning design approach supports varied scenarios of use, including individual video clips being used in f2f classrooms, and provides access for off campus distance learners being able to communicate with peers regardless of location.

Thus the Hull VGS has begun to integrate Web 2.0 tools, often referred to the read/write web. They enable the students to interact with the website and leave the results of their interaction with the site for other students to observe. In contrast the Sheffield VGS has only included personalisation for the student by helping them to identify material that they want to use. However both VGSs enable the support of multiple communities; in the Hull VGS this is enabled by the identification of key individuals in the community and an individual record, in the Sheffield VGS by personalisation implemented by a search tool. Both VGSs use actor-network theory in different ways; The Hull VGS has given more scope for individual actors (students) to perform actions within the network to support their own needs that are pre-determined by the technology actors (tools) than the Sheffield VGS. The Sheffield VGS has not achieved such close integration of the individual actors with the

technology actors, but by placing emphasis on projecting research as ‘stories’ with many different actors is perhaps using the technology as a leading actor to scope the network of actors. However neither method asks the students to proactively form or align themselves with a community, relying mainly on pre-existing structures. Thus both systems rely primarily on a pre-imposed structure with little opportunity for individual agency within the virtual environment and both systems possibly also discard the agency that results from interaction with a tutor in the Masters course. Similarly the actors or students are isolated without a network in this structure, their actions remain separate and don’t affect other students in the network, however the role of the tutor has reduced. This illustrates the level of connectivity which has moved from a direct tutor-student relationship to one where this is mediated by the learning environment.

The theory is reflected by the interactions that we have observed on the Hull VGS and in face to face communications with staff and students. An analysis of Hull VGS site usage indicates that students access it to passively consume the resources rather than engage in discussions or upload their own resources. If active or networked learning occurs it is outside of the site and within students existing networks. However when questioned both staff and students praise the interactivity of the site but unless actively facilitated they appear unwilling to contribute themselves. Our suspicion is that the action of facilitation brings students in as guests (with some authority) thus giving confidence, but does not actually form the necessary network connections.

In both cases Web 2.0 tools could be used to significantly enhance the student experience by adding an action of agency to the online community. If we look to the wider web, the tools which have created the most impact are those which relate to social working and networking, in essence individuals working towards a collaborative goal. From the perspective of Giddens’s structuration theory we might characterise this as the opportunity for interaction being distributed equally among the community resulting in expanded networks with higher levels of connectivity. The tools that the Hull VGS has implemented so far have focused on passive sharing of a student’s activities, a record of their log of their work and access to discussion groups (which have limited usage), and thus students had limited agency/inaction online. We envisage that the social/community work of the body of doctoral students is to create knowledge and meaning, thus a Web 2.0 tool could be used by students to actively share their research processes and journeys. To build communities in this environment, the tool could automatically group students into communities by keywords in the status updates or other materials accessed, and share status updates between students. This could enable a student to be members of multiple communities/layered networks where they hold influence with minimal overhead.

Consultation with staff and students who have used the Hull VGS have confirmed this theoretical result. Students are keen to use appropriate social media to enhance their research, but are less interested in using such tools purely for training. Staff similarly remain focused on guiding students towards the production of their thesis. Students preferred use would involve contacting or tracking other users to gain useful information to support their research. Whilst this is not specifically research training in the Robert’s interpretation, it is closer to the approach emerging in the form of the Researcher Developer Framework (Vitae, 2009). Here transferable skills are embedded into research skills rather than being treated as a distinct entity. Similarly a social media networking tool that encouraged collaboration and networking for research would inevitably lead to the development of skills. However this raises a significant issue of policy, which is that it is the case that most students are within relatively small specialist research groupings, and thus already have access to those people who matter within their institution. Therefore for such a network to be successful it would have to operate over institutions, we anticipate that in the current competitive climate there may be resistance to this approach as it potentially dilutes the prestige of a student attending any particular institution. Alternatively, to build a community within a single institution, we must redefine research success to include ideas applied over a multitude of disciplines, no easy task, and one that would be opposed by much of the academy.

Conclusions

This study indicates the value of using theoretical frameworks as a means for informing academic practice, and for comparing and contrasting two different approaches to networked learning. The findings from the use of Giddens’s structuration theory indicate the different influences of the interpretative schema of the programme or

development teams, the influence of external agents such as a graduate school and also the power of the internal funders via Roberts funding. It also helps to explore the influence of organisational norms on established programmes and also the absence of norms with new developments such as a VGS. Structuration theory also helps to illustrate the complex interactions between interpretive schemas, resources e.g. external funding and ICT, and organisational norms.

Actor-network theory helps us to envisage and map the complex and multiple interrelationships in which research students engage and gives us a means of acknowledging the social learning experiences of students that also incorporate other agencies, including non-human agencies such as technologies. It also gives us an opportunity to acknowledge not only the diversity of research students themselves but the diverse research environments in which they participate, both inside and outside institutions. It also helps us to make decisions about the design of virtual graduate schools that can rationalize the embedding these ideas of fluid communities of practice, and to incorporate tools and technologies as agencies within these networks to create an effective research community. These theoretical frameworks have helped us to problematize and begin to understand the challenges of achieving online participation in a networked learning research community and the barriers to that participation.. We have also begun to theorize and situate methods of supporting diverse and multiple communities of research students within technologies that have the potential to achieve some cohesion and can possibly be viewed as new forms of networked learning.

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