COMPLEX LEARNING COMMUNITIES

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ABSTRACT

A new breed of learning community which is driven by the need to generate learning, creativity and economic capacity is emerging as a result of the demands of the Information Society. Radical heterogeneity and multiple drivers make these learning communities significantly different from previously identified learning communities such as corporate Communities of Practice or Virtual Learning Communities. If full benefit is to be realised from such Complex Learning Communities (CLCs), then better understanding of their complex behaviour and methods of maximising their effectiveness are required. This short paper presents an overview of CLCs and reports on the development of a research agenda designed to address the identified gaps in knowledge.

KEYWORDS

creativity, capacity, learning communities, emergence

1. INTRODUCTION

The need for a confident, competent and adaptable workforce is widely recognised and has led to the acceptance of learning as an integral and integrated part of life. Lifelong learning initiatives designed to equip citizens with the right tools and proficiencies to adapt rapidly to new situations and challenges abound. In many cases, however, this has not led to the hoped for economic regeneration; the economic capacity to utilise the revitalised workforce in the new economy has failed to materialise (Nooteboom 2000). Fundamental to building capacity is the creation of opportunity and its realisation through apposite knowledge and competencies. One promising solution is the combination of learning with the creation of opportunity and resources in order that new skills and knowledge may be productively applied (Fukuda-Parr et al 2002); a new breed of Learning Community (LC) which combines learners, educators and business professionals in a contextual, creative space with the goal of developing not only the knowledge and skills of learners but also of creating ideas, synergies and opportunities, is emerging.

This novel breed of LC is significantly different in nature from more traditional eLearning communities such as corporate Communities of Practice (CoPs) or Virtual Learning Communities (VLC). Firstly, the aim is to generate multiple 'products' – learning, creativity and capacity. Secondly, such LCs consist of not only learners and educators but also potentially practitioners and managers from business, economic developers and entrepreneurs. And thirdly, this heterogeneity means that there are vastly different drivers for participation and measures of success. Thus, LCs are increasingly complex in nature and may no longer be narrowly focused in either task or interest domains which have proven to be critical criteria for success in CoPs and VLCs (Brown & Salafsky 2004). While there is undoubtedly much excellent work within the field of 'traditional' eLearning Communities regarding pedagogical frameworks and collaborative and educational technologies, new understanding is required if this new breed of LC is to be successfully realised. Indeed, other novel LCs may also appear in response to changing societal needs.

This paper addresses the issues that may arise from such new CLs by introducing the concept of Complex Leaming Communities (CLCs), identifying their distinguishing characteristics and highlighting the gaps in knowledge which they raise. Examination of real CLCs is then provided to support this characterisation. This in turn is used to set an agenda for future research, which is compared with existing work. The paper concludes with a summary of findings, identifying the novelty of this approach and future steps.

2. CHARACTERISTICS OF COMPLEX LEARNING COMMUNITIES

2.1 Radical Heterogeneity

These new CLCs are *radically heterogeneous* in nature. Not only do they consist of 'normal' learning community roles of learner, educator and facilitator but also potentially industry practitioners, technologists, regional developers and entrepreneurs. This brings both advantages and problems. On the positive side, their connectivity and therefore influence spread far beyond that of traditional corporate CoPs; through the diversity of participants, CLCs are interconnected with and therefore influence a wide sector of the business community, development agencies, local communities and the education sector. On the negative side, radical heterogeneity may result in lack of shared meaning and values, reducing the potential for social construction of learning. Building bridges across the diversity to create a true community will be vital to success.

2.2 Multiple Drivers

The *multiple drivers* of, for example, *developing learning, creativity and capacity* make CLCs radically different from corporate CoPs and VLC. This multiplicity of purpose may lead to conflict and lack of focus. The competing drivers of individuals and the consequential difference in how they measure success may pull against each other, resulting in chaotic dynamics where the CLC is in a constant state of flux. While this can be an extremely creative domain, long-term chaos can prohibit stable construction (Kurtz & Snowden 2003). Reconciling the multiple drivers within CLCs in a creative but constructive manner is not a simple task.

2.3 Hybrid Spaces

The need to build capacity and develop appropriate skills and knowledge demands engagement with business in a situated and realistic way; an element of co-location is required. On the other hand, development of proficiency in the technologies of the 'new' Economy is fundamental to the purpose; technology increasingly plays a fundamental part in the learning and creative experience. Thus, CLCs combine both virtual and material spaces, forming *hybrid spaces* (Harrison & Dournish 1996) for situated learning and creativity. The concept of hybrid space is not new; it has been used successfully to transform traditional experiences such as exhibitions (Tate Modern in London & Exploratorium in California) and to create emotional attachment to products such as Lego at Lego Imagination Centres. The range of potential application is not yet well understood and design issues should consider hybrid spaces as a medium in its own right (Lee 1999).

2.4 Complexity

CLCs like social communities in general are *complex in nature*; the multiple interactions of people, their environment (physical, virtual and social), technology and drivers lead to *'organic'* development and *'emergence'* of new properties, which are not possessed by the constituent individuals in isolation. These emergent properties may take the form of additional individual, group or environmental capabilities. For example, emergence relevant to improving citizens' capabilities or regional employment capacity may include social capital (Daniel et al 2003), eLiteracy (McDonald & McGill 2005) and creativity (Cavalletti 2003). The unpredictable nature of complex systems makes traditional methods of design and control ineffective and the desired emergence impossible to guarantee; it is dependant on the dynamics of interaction and initial context and conditions. For organisations wishing to develop CLCs this leads to a number of problems: how to ensure desired capabilities emerge; what is the range of potential that may be generated; how may this be maximised; how can successful CLCs be 'reproduced' in different social, economic or learning contexts?

In the next section, three examples of real CLCs are introduced and their characteristics discussed in order to support the characterisation of CLCs introduced above. The cases are presented anonymously to preserve investigative rigour as the research process is still ongoing.

3. COMPLEX LEARNING COMMUNITY EXAMPLES

3.1 UK-based Learning Community

The first example CLC focuses around a project to support learning in the broadcast, performance and creativity domains and has multiple stakeholders groups. The 'artists' wished to develop their interests, but lacked the opportunity, confidence or educational qualifications to progress their ambitions. The educators involved were not professional teachers, rather they came from young industry companies bringing a contextualisation, enthusiasm and 'street credibility' to the community, which was considered to be one of the core reasons for success. Technologists developed a web tool to support any-time anywhere learning that was used in conjunction with face-to-face experiences with industry experts and industry standard equipment. This combination of technology and physical interaction was central to the CLC. A co-ordination function was provided by professionals experienced in more traditional training and social outreach programs. The local development agency, the project sponsor, provided both finance and the initial genesis and retained an interactive role as the CLC developed. The final groups of stakeholders were the local communities, to which the artists returned with the products of their learning and the wider industry community which attended sessions and with which some artists later worked.

Multiple drivers are evident. The development agency wished to improve employability and economic capacity and the industry companies desired additional funding streams. Artists joined for a variety of reasons: to improve their skills and competencies, as a prelude to more mainstream education, to develop skills or material to take back to their community or simply initially to follow their interest.

Interconnectedness and non-linearity of the CLC was viewed as essential to the way it evolved. Unpredictability was acknowledged from the outset and a management style was used, which firmly managed constraints while enabling the CLC to develop organically within these constraints. This was seen as being more beneficial as "more innovation could emerge". While the diversity of the stakeholders, their multiple perspectives and regular interaction was seen as critical, the stakeholders had been carefully chosen to be young, enthusiastic with relevant contextual experience (the exception being the local development agency) - this was considered to be one of the core reasons for success, enabling shared language, meaning and trust to be quickly established. A number of different 'products' emerged: new skills and confidence, new commercial strengths, revenue streams and companies, new support networks and new opportunities for application of tools and insights developed.

3.2 Industry Forums

Industry Forums - consisting of commercial organisations, practitioners and end-users within a given domain or industry, regional developers, education representatives and researchers - increasingly fit the CLC criteria; multiple drivers are apparent, ranging from business development, problem solving, research to information exchange, networking; learning, innovation and industry development are at the core. Increasingly a hybrid approach is taken, combining virtual and face-to-face meetings, often in creative, hybrid spaces. These forums cannot control the profile of their stakeholders unlike example 3.1 and anecdotal evidence suggests that in some cases there has been a failure to successfully build trust, shared meaning and understanding due to such diversity. (Agreement is still being sought for in-depth investigation.)

3.3 US-based Pupil-Industry Research Community

The third example CLC brings together school pupils and practitioners from industry to work on joint projects – "driving learning and creativity with the aim of germinating future capacity in research and industry". Additional stakeholders include industry practitioners, financiers and academic liaison officers who provide connections to resources and advice on scientific, technical, entrepreneurial and operational issues. Innovative technology is combined with purpose physical space forming a hybrid environment.

4. DEVELOPING A RESEARCH AGENDA

If the challenges of the previous sections are to be surmounted, then new understanding of the CLC characteristics and their complex interaction is required. The complex nature demands a non-prescriptive, organic approach. What study of complex systems shows is that diverse systems may behave in similar ways; understanding at a 'meta level' what drives the categories of dynamics observed may lead to identification of 'seed components' of CLCs, which will enable organic yet constrained development and limited intervention strategies to achieve desired results. The research methodology consists of modified systematic review of existing understanding of LCs, iterative discussion of a cross-disciplinary nature with domain experts in creativity and innovation, design, technology, education and economic development to introduce both domain-specific understanding and novel insight, and study of example CLCs. Initial research suggests the following areas may prove fruitful, enabling purchase on this difficult area to be achieved.

4.1 Classification of Learning Communities

While the new breed of LC identified in this paper is radically different, that does not make insights from existing LCs irrelevant; many of the interactions in traditional LCs also occur in these new CLCs (e.g. communication, social construction of learning and eLiteracy development). Such insights however must be understood and applied in appropriate contexts. Thus, it is proposed that a matrix classification of learning communities which includes innate (drivers, constituent makeup, environment, context) and emergent characteristics be developed. This will not only make explicit the wide variety and characteristics of LCs, but also enable identification of 'meta' drivers, relationships and constraints associated with specific behaviours of LCs, through analysis of patterns within the 'matrix'. This proposed research is significantly different from existing analysis of LCs (e.g. Brown & Salafsky 2004) for two reasons: (i) using a 'complexity lens' it will examine not only desire emergence such as knowledge generation, but also incidental emergence such as social capital and (ii) it will encompass the full range of LCs from traditional through e-learning to these new CLCs.

4.2 Investigating the role of 'e'

As the example CLCs in section 3 above illustrate, the role of 'e' will be multiple: technology may underpin learning, development of eLiteracy, collaboration, and business processes. In addition, discussion with domain experts drew out the issues of whether technology has a potentially catalytic role in the generation of creativity, the much debated technological pull versus business push, the potential of holistic approaches to material and technological space (hybrid space) design and how to engender trust and shared community. 'e' was viewed as potentially playing an enabling, educational and generating role, but new knowledge on how to effectively design and realise this was deemed necessary.

4.3 Co-constructing Success

To avoid continually chaotic dynamics that may result from the variety of drivers and measures of success (e.g. the example cited in section 3.2 above), a method of 'building bridges' within the CLC to constrain the chaos is required. Analysis of the example CLCs and discussion with experts led to the hypothesis that a scaffolding approach informed by Vygotsky's co-construction, where community members support each other within a framework to develop and reinforce successful behaviour might provided a useful method as this should facilitate buy-in and development of shared meaning and understanding; success may be co-constructed. A number of fields offer insight into how these bridges or scaffolds may be constructed: social constructivism, where learning advances through collaborative social interaction and the social construction of knowledge (Brown et al 1989), emotional intelligence which aids harmonisation (Goleman 1995) and narrative which helps develop shared meaning and goals (Seely Brown et al 2002). Improved understanding of how learning, emotion and narrative can be used to co-construct success may provide useful insight.

4.4 Seeding CLC: Developing a Framework

The highly complex nature of CLCs means there is no 'tried and tested', universally applicable format for enabling CLCs to achieve the desired goals (emergence) of, for example, improving citizens' capabilities and regional employment capacity; CLCs develop organically from a given set of initial conditions. A framework approach which includes identification of seed components, analysis of potential development scenarios, monitoring of success and intervention strategies to improve success and discourage unwanted emergence offers a promising method for achieving this task. The three research streams outlined above will help identify constituent components, but considerable research into appropriate framework and analysis strategies and techniques is required. A complexity-based approach seems best suited. Work from other domains may help inform development of a seeding framework for CLCs (Kurtz & Snowden 2003; Mitleton-Kelly 2004).

5. CONCLUSION

This short paper identifies the emergence of a novel type of Learning Community (LC), which cannot be fully understood in terms of existing knowledge of Communities of Practice or Virtual Learning Communities. The pertinent features of such CLCs are their complexity, radical heterogeneity, utilisation of hybrid space and multiple, potentially conflicting drivers of, for example, enabling learning, creativity and economic capacity. In order to improve understanding and the ability to seed new CLCs with the desired effects in varying social, economic and learning situations, a research agenda of (i) classification of CLCs, (ii) investigating the role of 'e', (iii) co-constructing success and (iv) seeding and managing CLCs has been proposed, which will pull together relevant work from a number of complementary fields. This approach offers much novelty, characterising a novel type of LC and identifying key areas where generation of new knowledge is required. The next steps are to further refine the research agenda and engage with CLCs to conduct the proposed research.

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