# Communal Constructivism and Networked Learning: Reflections on a Case Study

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## ABSTRACT

Holmes et al. (2001) have suggested that the advent of new educational technologies warrants a new kind of educational theory - 'communal constructivism.' Communal constructivism attempts to move beyond social constructivism and capture specific elements of the additional value that C&IT applications bring to the learning and teaching environment.

Our paper will critically evaluate the usefulness of Holmes et al's ideas through a case study of the way in which a virtual learning environment, *Blackboard*, is currently being used to support students on a level three unit *ICT in an Educational Context* at Sheffield Hallam University.

### Key words

Communal constructivism, social constructivism, case study, design and pedagogy

## INTRODUCTION

Social constructivism, as a broad theoretical framework regarding how people learn, argues that learning taking place within 'situated' learning contexts are optimised (Oliver and Herrington, 2000). It is frequently suggested however that, while traditional teaching methods prove largely inadequate for cultivating such environments, C&IT-enabled approaches to learning are particularly adept at doing so. Holmes et al (2001) have queried this assertion and offered an alternative. They suggest that the appropriate use of C&ITs in education can foster learning contexts that, not only achieve, but move beyond the goals of social constructivism such that a new, updated version of the philosophy is required: They suggest that *communal* constructivism better describes the possibilities forded by new technologies. Described as a learning theory, *communal* constructivism posits that students not only actively and socially create their own knowledge, but are active in the process of constructing knowledge *for* a larger learning community, be it in HEIs or wider disciplinary arenas.

The paper begins with an overview of the basic assumptions that inform a social constructivist approach to teaching in order to demonstrate how Holmes' conception of communal constructivism progresses from this. It then clarifies what the fundamental tenets of constructivist pedagogy are and applies these to a case study. It will be argued that communal constructivism, while not departing in any radical ways from social constructivism and thus perhaps not offering a new learning theory can convey methods of best practice in the design of networked learning environments. It is perhaps the case that communal constructivism can help transform social constructivist educational theory into practice at ground level.

## THE CONSTRUCTIVIST CONTINUUM

There is no single constructivist position in the field of education: Constructivism doesn't represent a distinct theoretical position. Rather, constructivism is better understood as a continuum (Doolittle, 1999). The assumptions that underlie this continuum vary in a number of respects and have consequently resulted in the development of a variety in the types of constructivism, divided, generally speaking, into three broad categories: Cognitive Constructivism, Social Constructivism, and Radical Constructivism. Despite these different 'Constructivist' learning theories each possesses a central tenet; the belief that behaviourist learning theories are fundamentally flawed in their assumptions regarding how students learn. Behaviourist theories subscribe to an objectivist epistemology that posits knowledge as separate from and external to the knower and so centres on students' efforts to accumulate that knowledge and on teachers' efforts to transmit it. It relies on teacher-directed and controlled education, a transmission approach which renders learners largely passive. (Miller and Miller, 2000, Tierne and Ingram, 2001). By contrast, constructivism as a general learning theory, places emphasis on the knowledge, attitudes, and interests students bring to the learning environment. It posits that learning is a result of the interaction between the student and their prior knowledge and experiences in such a way that learners construct their own meanings through an internal, interpretative process.

Within the constructivist continuum the more holistic perspective of social constructivism pioneered by Vygotsky (1978) has, for many, emerged as the commonly acceptable form of constructivism and has received most attention. This variety of constructivism stresses the importance of culture and context in forming understanding and so recognises interdependence between cognition and context:

> *Learning is not a purely internal process, nor is it a passive shaping of behaviours. Vygotsky favoured a concept of learning as a social construct which is mediated by language via social discourse (McMahon, 1997).*

Ideas about how people learn necessarily have implications for how people should be taught - the link between theory and practice. Social constructivist pedagogy generally incorporates two premises that flow from the assumptions of social constructivist learning. Firstly, instruction must be founded on the knowledge, attitudes, and experiences students bring to the learning situation. Secondly, instruction must be designed in such a way that students are provided with experiences that effectively interact with the elements of a student's cognitive make-up so the student can successfully construct their own meanings: Constructivism involves the active formation and adaptation of thoughts and ideas (Howe and Berv, 2000). Consequently, emphasis is placed on learner autonomy, on the role of the student in the learning process as opposed to the role of teacher. A definition is provided by Fosnot (1996):

> *Learning from this perspective is viewed as a self-regulatory process of struggling with the conflict between existing personal models of the world and discrepant new insights, constructing new representations and models of reality as a human meaning-making venture with culturally developed tools and symbols, and further negotiating such meaning through co-operative social activity, discourse, and debate. (p. ix)*

Learners are conceived of as active participants in the learning process and ultimately responsible for their own learning.

Flowing from these general principles are more specific practices. Yet what these practices may be varies between different theorists and practitioners: they seem to disagree about what constitutes constructivist pedagogic practices, specifically. This disagreement seems centred however on the peripheral principles since the different pedagogies advocated generally share a set of core design principles. There is then some agreement with regard to the fundamental factors that appear paramount in constructivist pedagogy. Broadly, this may be summed up in the oft-cited assertion that constructivist learning takes place in *situated* learning contexts. From the literature, in the same way as constructivism, situated learning isn't a unified term that corresponds to a clear definition; in fact, the concept is often used interchangeably with concepts such as authentic learning and contextual learning.

Oliver and Herrington (2000) have developed nine elements, compiled from different articles that provide a particular definition of situated learning, which they believe comprise the situated learning environment:

Authentic Contexts:

Authentic activities

Access to real life expert performances

Multiple roles and perspectives

Collaborative construction of knowledge

Reflection to enable abstractions to be formed

Articulation to enable tacit knowledge to be made explicit

Coaching and scaffolding by the teacher at critical times

Authentic assessment of learning within the tasks

Traditional teaching methods in higher education are frequently critiqued for being ineffectual in realising the goals of social constructivism; i.e. they don't easily facilitate situated learning. It is the new interactive environments that are frequently heralded as being particularly adept at supporting social constructivist learning. Among other things, networked learning via the Internet and the WWW purportedly generate a personal authenticity among learners by giving them a stake in the learning process since the connectivity of computers allows students' work to be published and shared over the web. Participation in discussion boards and conferencing is assumed to promote communities of shared knowledge and understanding with diverse number of students across time and space. The connectivity made possible by the Internet also provides a real world context for learning activities and gives students access to experts in the field. What's more, networked learning also allows easy access to information in a variety of media granting students the freedom to explore on their own thus freeing tutors from playing the proverbial 'sage on the stage' and allowing them instead to play the 'guide on the side' (Tiene and Ingram, 2001. Shaffer and Resnick, 1999). Accordingly, web-based or Internet-based education is the new craze and higher education is witnessing an increasing proliferation of web-based instruction.

The following case study demonstrates the application of these principles.

## CASE STUDY

The case study is based on a level three undergraduate unit *ICT in an Educational Context* at Sheffield Hallam University. This is a specialist unit taught over seven weeks to Education Studies students and students seeking qualified teacher status (QTS) in Primary Education. As part of the unit the students spent two days on placement in schools in the Sheffield area. The role of the students in these placements was to work as agents of change in ICT; operating in groups, they were asked to identify the school's ICT needs and formulate a strategy for implementing an agreed solution. The learning objectives therefore were that students would be able to use the Internet to use the University's virtual learning environment (VLE), *Blackboard* to find and retrieve resources relevant to their work, to be able to participate appropriately in online discussions and to be able to discuss issues about ICT in schools. Pre-requirements for the unit were successful completion of the level one, *Introduction to ICT* and the level two unit, *Managing ICT Systems*.

Constraints on the unit were that practicals and lectures were scheduled for 7 weeks divided by the Easter vacation. There were two groups and two tutors; the Education Studies group (16 students) was taught by one of the authors (Whittaker) and the Education QTS (15 students) by another of the authors (Pountney). Weekly sessions lasted four hours and were held in a computer classroom that houses 24 networked PCs. Students had access to a set of development software that included presentation software, web page editors and graphic packages. The use of an electronic VLE, *Blackboard*, underpinned the teaching of the unit and incorporated the facilities of document retrieval, learning resources, discussion board and a virtual classroom (*Tutornet*). The pedagogical strategies employed in this unit were based around a mixed economy of face-to-face taught sessions and the support afforded by a virtual learning environment.

As noted, Oliver and Herrington (2000) (also Herrington and Oliver, 2000) identify nine discrete elements, derived from a wide-ranging and detailed review of the literature, as critical elements in the design of learning environments based on the principles of situated cognition and situated learning. Analysis of the manifestation of the elements of situated learning reveals the constructivist underpinnings of the unit under consideration. The context is the actual work setting (the school) and the learning environment (*Blackboard* and the classroom) were used to promote situated learning and associated authentic activities. In terms of instructional design it is evident here that Blackboard can offer "a powerful and acceptable vehicle for the critical characteristics of the traditional apprenticeship to be located in the classroom environment" (Herrington and Oliver, 2000: 24).

The application of these principles to the unit to the unit is summarised in Table 1.

Table 1: Manifestation of critical elements of situated learning in the learning environment

| **Elements of Situated Learning** | **Manifestation in the Learning Environment (*Blackboard*)** |
|---|---|
| 1. *Authentic contexts* (that reflects the way the knowledge will be used in real life)<br><br>• a large number of resources | • interface organised around the central context of consultancy (needs analysis, developing solutions, management of change)<br><br>• hyperlink navigation enabling ready access to any media element |

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| • a non-linear design<br>• no attempt to simplify | • resources (web links, direct link to Learning Centre catalogue, Key Text collection)<br>• no simplification of real-life resources (training materials) |
| 2. *Authentic Activities*<br>• real world relevance<br>• ill defined activities<br>• a single complex task<br>• opportunity for students to design tasks<br>• opportunity to detect relevant info.<br>• sustained period of time<br>• opportunity to collaborate<br>• tasks that can be integrated across subject areas | • problems identified mirror those facing ICT coordinators<br>• the problem is not prescribed by the unit<br>• each investigation presents a complex task with a single sustained context<br>• students analyse individual needs of client school<br>• students work on the project for 6 weeks (including Easter)<br>• solutions are researched and resourced from an open set<br>• students work in 8 consultancy teams (3 or 4 per team)<br>• solutions tend to be cross-curricular |
| 3. *Access to real life expert performances*<br>•1 access to expert thinking<br>•2 access to learners varying in expertise<br>•3 sharing of stories<br>•4 access to the social periphery | •5 consultant available online<br>•6 teachers in schools provide feedback, contact with previous year's student (2002)<br>•7 group, cohort and whole unit discussion forums online<br>•8 case studies of school ICT development presented |
| 4. *Multiple roles and perspectives*<br>•1 different perspectives on the topics<br>•2 opportunity to express points of view<br>•3 opportunity to criss-cross the learning environment | •4 each strategy can be seen from the perspective of consultant, senior management team, teachers and children (and Ofsted)<br>•5 presentations of solutions and collaborative teams<br>•6 sharing of resources from within the eight teams |
| 5. *Collaborative construction of knowledge*<br>•1 tasks addressed to group<br>•2 classroom organisation into groups<br>•3 appropriate incentive procedure for whole-group achievement | •4 each team allocated one school<br>•5 teams sub-divided to roles (technical, organisational)<br>•6 grades for project report based on solutions devised by group |

| | |
|---|---|
| 6. *Reflection to enable abstractions to be formed*<br>•1 opportunity to compare with other learners<br>•2 collaborative groupings of students | •3 summaries of team reports discussed in general forum online<br>•4 individual and group reflective diaries maintained |
| 7. *Articulation to enable tacit knowledge to be made explicit*<br>•1 complex task incorporating inherent opportunities to articulate<br>•2 groups to enable articulation<br>•3 publicly present argument to enable defence of learning | •4 task involves investigation based on complex, real-life needs of a school (rather than tutor's prescribed expectations)<br>•5 group (written) report provided for the school (and other teams)<br>•6 presentation of needs analysis to school senior staff, strategies negotiated and explanation to all school staff |

Table 1: Continued

| **Element of Situated Learning** | **Manifestation in the Learning Environment (*Blackboard*)** |
|---|---|
| 8. *Coaching and scaffolding by the teacher at critical times*<br>•1 complex open-ended learning environment<br>•2 non-linear multimedia design<br>•3 guidelines in variety of contexts<br>•4 collaborative learning<br>•5 lecturer available for coaching | •6 virtual learning environment expandable to accommodate students contributions and negotiated needs<br>•7 instructional design based on hypermedia<br>•8 student handbook and technical manual available online<br>•9 more able participants leading providing technical support<br>•10 email and discussion forum access to tutors (learner support) |
| 9. *Authentic assessment of learning within the tasks*<br>•1 fidelity of context<br>•2 opportunity to craft polished | •7 students have real life context for their products / performance |

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|---|---|
| performances or products<br><br>•3 significant student time and effort in collaboration<br><br>•4 complex, ill-structured challenges<br><br>•5 assessment seamlessly integrated with the activity<br><br>•6 multiple indicators of learning | •8 students required to produce ongoing *Reflective Diary* and to present a synthesis of this<br><br>•9 complex investigation requires significant time (4 weeks)<br><br>•10 *Project Report* open ended and responsive to school's needs<br><br>•11 students assessed on the results of the solutions developed and strategies used to implement them<br><br>•12 indicators of learning comprise a formal written report and a reflective diary |

In the students' evaluation of the unit students were asked about the relevance of the content and the assignment to both their degree and to their future career (table 2). This indicates a high satisfaction and may be indicative that a "personal authenticity" had been generated in the unit.

Table 2: responses from student survey

| Relevance / Usefulness (27 responses) | Excellent | Good | Satisfactory | Unsatisfactory | Poor |
|---|---|---|---|---|---|
| Relevance of content to your degree | 8 | 13 | 3 | 3 | 0 |
| Usefulness for your future career | 7 | 16 | 2 | 2 | 0 |
| Relevance of assessment to what was taught | 2 | 18 | 7 | 0 | 0 |
| Relevance of assessment to future career | 5 | 16 | 5 | 1 | 0 |

The a-synchronous communication in the unit was supported by the discussion forums in *Blackboard* and provided a reflective tool for the teams and individuals, albeit evoked through the incentive of assessment (Pountney and Oxholm, 2001):

*"The discussion forum was an ideal place to discuss the problems we faced with our placement….The advice offered by (peers) and their contributions aided the development of our solution …Listening to and taking on board what my peers had said led to issues arising that I hadn't considered …and I feel that I have learnt a great deal from them."*

It also provided for the less confident student:

*"This area of Blackboard (discussion forums) helped to build confidence encouraging everybody to take part either by starting a new discussion or commenting on an existing one, which might not happen in a classroom environment in front of peers, when only certain people contribute."*

Synchronous communication is facilitated in *Blackboard* through the virtual classroom. Students reported this as useful:

*"The virtual classroom gave the group the opportunity to meet up with their peers or their lecturer to discuss ideas and solve on-going problems. The VC was used on a few occasions in my group because two of the members lived 45 minutes away. Saving us time and helping us to progress quickly."*

And it led some students to develop their own strategies:

*"I found the use of the virtual classroom strange but interesting – initially the whole group was frivolous and then the process of*

*typing wasn't fast enough so we started to improvise our own abbreviations."*

Further feedback was elicited by a questionnaire that was returned by 12 of the students and gave a positive indication that Blackboard was deemed a useful tool in supporting learning. The discussion boards and the external consultant were considered particularly helpful.

## COMMUNAL CONSTRUCTIVISM

For Bryn Holmes et al (2001) the advent of new technologies renders social constructivism lacking in its explanatory capabilities: They argue that social constructivism can not fully capture all the possibilities that networked learning offers. Networked learning is thought to add something else to the learning process and they suggest that 'communal constructivism' is a better explanatory framework:

> *What we argue for is a communal constructivism where students and teachers are not simply engaged in developing their own information but actively involved in creating knowledge that will benefit other students. In this model students will not simply pass through a course like water through a sieve but instead leave their own imprint in the development of the course, their school or university, and ideally the discipline. (Holmes et al, 2001:1).*

Such a notion encompasses the assumptions of social constructivism and pedagogy but adds something new in light of the possibilities proffered by new technologies. In a communal constructivist learning environment, students are seen to not only actively and socially create their own knowledge, but are also seen to be active in the process of constructing knowledge *for* a larger learning community. The emphasis is on how students leave their mark on a course and a particular academic field, as an integral part of their learning. Students are expected to leave their mark on the development of the course, and ideally the discipline itself. The word communal therefore comprises connotations that the word social does not - notions of inclusiveness and collaborative working for the common good

The following are documented as being central communal constructivist pedagogical strategies (Meehan et al, 2001):

### Peer tutoring:

Deemed a powerful tool, not only in its supportive capacity, but also in its ability to capture the processes and products of students learning. In this way learning from one year to the next is not lost but is instead used to build a body of knowledge.

### Publishing:

Holmes et al maintain that the networked learning is important for both the consumption and production of information. The Internet becomes a means by which students' work may be captured and then disseminated to a wider audience. This is perceived to increase its value to both the students who have produced the work and to others who consume it.

### Roles:

A third strategy considered fundamental to communal constructivist thought is collaboration between tutors, academic peers and students in the process of knowledge construction. In this way those who do not belong to the formal academic community can have a role in the development of a disciplinary area not as voices reported by others but as important contributors in their own right: Students should have a right to be needed by the larger learning community.

### Assessment:

Communal constructivism endorses methods of assessment that support a richer learning product such as portfolio work in which learning gains are reflected on over longer periods of time.

This position certainly isn't a radical departure from the principles of social constructivism all of the above are endorsed by supporters of social constructivism and Holmes et al admit as much: "Many of the aspects of communal constructivism are not new" but according to them, "it is synergy of the variety of different successful techniques and the rise of ICTs to support the learning that has brought them together" (Holmes et al, 2001: 11). What Holmes et al see as important is the added element that networked learning can bring: New technologies facilitate a *high quality* communal constructivism.

The remainder of the paper explores the strength and persuasiveness of Holmes argument by considering the following questions:

Do Web-based learning environments actually generate a set of pedagogical strategies that the notion of social

constructivism can not account for?

Is the theory of communal constructivism convincing or are its fundamental tenets already contained within the definition of social constructivism?

How do the issues raised modify our approach to the delivery and design of online learning?

We will explore these questions by asking whether the case study can be interpreted/re-described through the communal constructivist framework.

## DISCUSSION

Blackboard is not a constructivist environment per se: it is perfectly possible to build a teacher-led, delivery-based, transmission-of-knowledge model within Blackboard. Our case study demonstrates the way in which Blackboard was built on the principles of social constructivist pedagogy. In light of the work of Holmes et al however, could this web-based unit be re-described as a communal constructivist learning environment in which students are creating knowledge merely for themselves but for others as well? In answer to this, we remain sceptical.

In response to our first question set out earlier: *do Web-based learning environments actually generate a set of pedagogical strategies that the notion of social constructivism can not account for?* we suggest that the pedagogical strategies that communal constructivists champion are precisely those that social constructivists would also support (peer tutoring, collaborative learning) - activities that can certainly be carried out online or in a face-to-face context. Related to this, and in response to our second question: *Is the theory of communal constructivism convincing or are its fundamental tenets already contained within the definition of social constructivism?* we would suggest that the fundamental tenets of communal constructivism are already contained within the definition of social constructivism. It is indeed arguable that the notion 'communal' differs little from that of 'social' constructivism since social constructivism emphasises learning as a social and collaborative activity, learning isn't about competition and as such implicitly emphasises how learning serves a communal function. Communal constructivism doesn't therefore better explain how students learn.

That said, we suggest that what Holmes et al do highlight is the way constructivist learning may be effectively achieved through the use of C&ITs: We agree with Leask that "communal constructivism applies to a set of pedagogical strategies that are facilitated by ICT." Therefore, in answer to our third question: *How do the issues raised modify our approach to the delivery and design of online learning?* communal constructivism can help modify our approach to teaching with technology. It can help ensure that networked learning is employed in an appropriate, thoughtful and effective manner.

## CONCLUSION

We began by asking whether communal constructivism was a meaningful concept, sufficiently distinct from social constructivism to warrant attention and we have considered the use of a virtual learning environment, *Blackboard*, to answer this. In conclusion, we believe that communal constructivism *can* have an important role in influencing the design of networked learning by promoting a valuable debate around the issues of how to build learner-centred, supportive web-based environments. Communal constructivism is however better described as a framework that makes the most of what the technology has to offer (whilst avoiding a deterministic approach) – i.e. as a facilitator of new pedagogical approaches - rather than as a new or updated learning theory.

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