An Experiment in Computer Supported Collaborative Learning (CSCL) on an Undergraduate Business Module

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ABSTRACT

The paper reports on the conduct and the theoretical foundations of an on-going educational research project conducted within an undergraduate business degree programme at the Bristol Business School, UWE. It also contains some preliminary findings.

The project seeks to facilitate student group work through the introduction of computer supported collaborative learning (CSCL) and to evaluate its consequences for effective learning as measured by the task achievement and member satisfaction in three different types of student teams. The study also seeks to ascertain the extent to which team effectiveness is moderated (if at all) by students conceptions of learning and approaches to study.

Keywords

Research methodology, student experience, collaborative learning, group work

INTRODUCTION

The UK HE environment is increasingly characterised by diverse student cohorts and large student numbers, within a highly competitive regional, national (and international) market. The typical HEI response to these external pressures has been the modularisation, routinisation and standardisation of provision.

In this context Dearing (1997) argued that "*the innovative application of ... C&lT holds out much promise for improving the quality, flexibility and effectiveness of higher education*", particularly with regard to coping with increased student numbers, the more efficient use of resources, promoting student centred learning and collaborative work.

In line with the above vision of an e-learning society UWE won an award from the HEFCE Good Management Practice Fund. The purpose of this venture is to enable the University to develop a co-ordinated, strategic, and academically driven approach to the development of information and communications technology (ICT) in the delivery of high quality teaching and learning across a multidisciplinary programme.

Leading this venture is the Networked Learning Support Framework (NLSF) which has been established to widen participation in ICT-based teaching and learning, assisting staff in the provision of high quality teaching, learning and research across the University's academic community.

The NLSF is an integral part of UWE's evolving Learning and Teaching Strategy, a strategy that not only makes an explicit

commitment to developing innovative and reflective approaches to learning and teaching, but also demonstrates the potential of networked learning to meet the objectives of social inclusion and widening participation in education.

Research into the effective practice of networked learning is high on the agenda of the NLSF. To further research into this area, the NLSF has funded a number of bursaries for the academic year 2001-2. These allow the successful bursary holder(s), in cooperation with their faculty, to undertake research into various aspects of networked learning, eliciting recommendations and good practice which is disseminated across the University.

The authors' project is funded by the NLSF and Bristol Business School's (BBS) Teaching and Learning projects initiative, and reflects UWE and BBS's strategic commitment to networked learning.

background

The research is being carried out within the specific teaching and learning context of a 750 student, full-time, level one Organisation Behaviour (OB) module during the current academic year, 2001-2002.

Prior module based research had identified a number of problems that students had encountered when attempting to work collaboratively on assignments in team settings:

> Practical task and participation issues - meeting face to face, allocating tasks, co-ordinating the activities of the group, monitoring group performance and individual contributions

> Handling team-dynamics productively - interpersonal and group working skills, team-building, motivating the group, handling conflict, giving and receiving feedback, working collaboratively.

Prior to the start of this project module delivery was supported by a Web page, largely used to give information to students in a more easily accessible form e.g. contact details, week by week study instructions, lecture slides and notes, course workbooks and assessments. Topic related Web links provided additional perspectives and practical examples to support and extend students' learning. Little use had been made of the interactive possibilities of the Web site e.g. via the use of discussion tools or to provide feedback via on-line tests and quizzes.

Although, the experience of the Web page had been a positive one for both staff and students we were aware of the need to maintain, update and expand its use by making it more than sophisticated data storage / an expanded reading list, particularly given that the module also aims to incorporate collaborative learning through the mechanism of a group assignment.

This brought us to the recognition that there was a need to reinforce collaborative learning processes within the module and to realise the potential for networked learning in its many forms to improve the quality of teaching, student learning and the student experience in a mass education environment.

We used as our working definition of networked learning that offered by JCALT (2001:9), "*learning in which ICT is used to promote connections: between one learner and other learners, between learners and tutors; between a learning community and its learning resources*"

THE MODULE CONTEXT

In the first term module work is focused on the development of the knowledge and the understanding of basic Organisational Behaviour concepts. The web based support is provided by PageOut, a publisher (McGraw-Hill) provided course web design product.

In the second term, the project moved into the active stage – the virtual learning environment (VLE), Blackboard, is introduced into the module. During this term the experience of students using the VLE to complete a group research project is monitored and evaluated. Taught module content develops the skills of effective interpersonal interactions, group work and collaborative learning.

The student assessed work

Groups of 4-6 students complete a project that specifically requires students to participate in collaborative learning to research the theory and practice of a topic from the first term's syllabus. Each group submits a report of their findings which includes a review of their collective experience of working in the group. Students are also required individually to reflect on their behaviour in group settings and to identify personal strengths and weaknesses in relation to group work through the completion of weekly learning logs.

Each group can choose to use any, or all, of the following four VLE group communication tools to facilitate their collaborative activities:
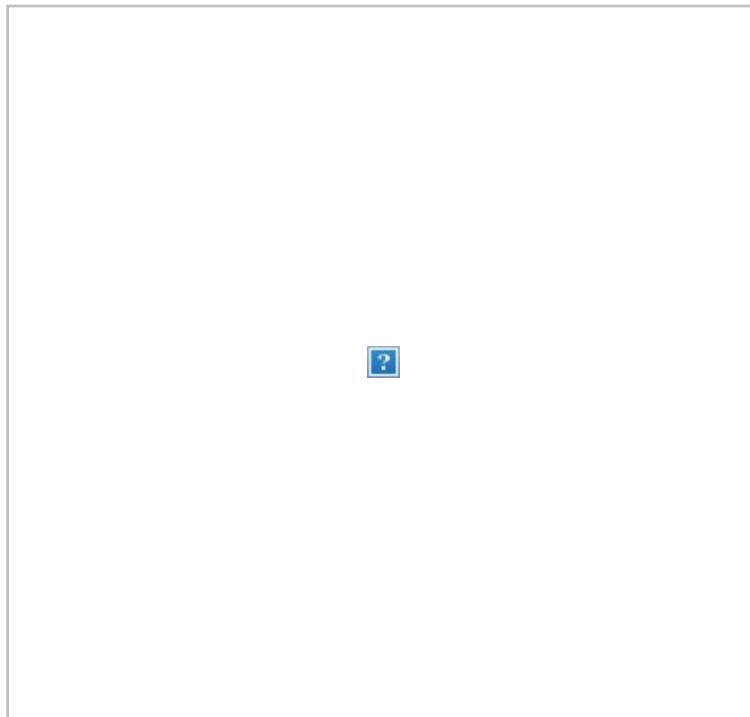
e-mail

discussion board

virtual classroom (chat)

file exchange.

theoretical underpinning

The research is situated within a theoretical context which primarily draws on the literature from our own field of Organisational Behaviour. Relevant constructs from within our own territory for the purposes of this research are:

Group effectiveness

In the Kretch et al (1962) model of group functioning, the dependent variables of group productivity and member satisfaction are seen as a function of the interplay between sets of independent and intermediate variables. For the purpose of the design and conduct of this research the model has been adapted as shown in Figure 1.

We are interested to explain any variations in the dependent variables (the outcomes) in terms of variations in the emergent processes .

At another level of explanation we will assess the extent to which the nature of the emergent processes themselves are a function of the independent variable of individual student approaches to learning.

Individual learning

Learning theory-in-use on the module is Kolb's (1984) Experiential Learning Cycle (Figure 2), where learning is defined as ".. *the process whereby knowledge is created through the transformation of experience"* . Experiential learning emphasizes the cyclical nature of learning with a dual concern for action and conceptualization.
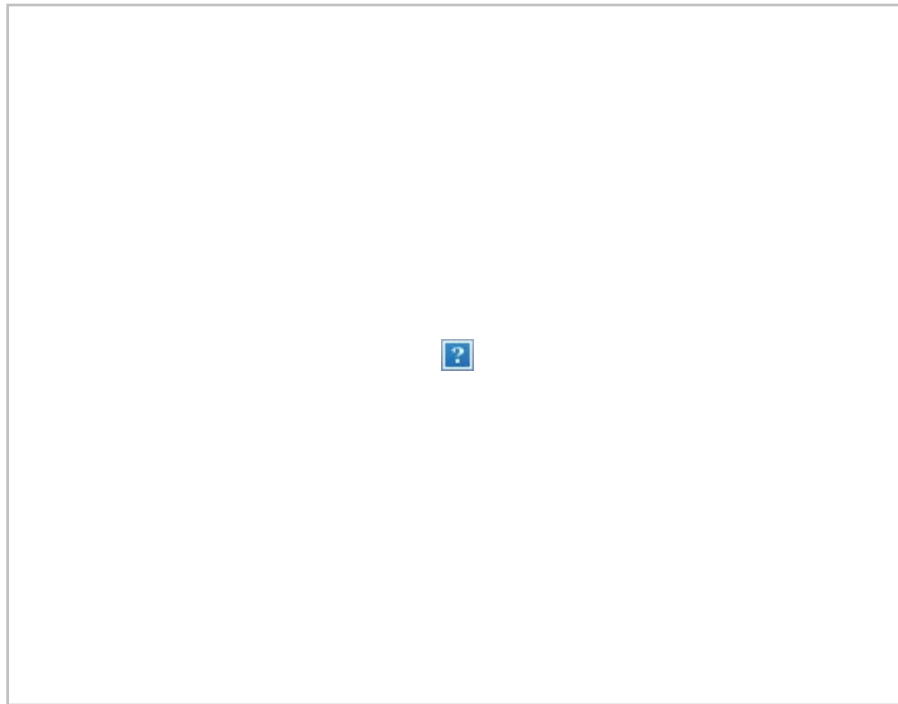
Learning is depicted as a four stage process wherein an individual's *experience* provides the data for subsequent *reflection* and interpretation as the basis for *conceptualisation* and integration of the new learning with existing knowledge. The fourth and final stage involves *testing* the validity of this learning through action in future situations that in turn create further experiences to reflect on. Each individual will vary in their ability at each stage and this will influence how individuals prefer to learn.

Although we have found Kolb useful in our pedagogy, for our research purposes we actively sought out a theory of learning styles with greater relevance to student learning and one that is grounded in educational research. Duff's (2000) critique of the validity of learning styles research in management development led us to engage with the research of Tait & Entwistle (1995), and McCune & Entwistle (2000).

This research describes important differences in the ways students tackle academic tasks and in their preferences for teaching styles in terms of the distinction between *deep* and *surface approaches to learning* and the category of *strategic approach* to studying. These 'analytic abstractions' are derived from the results of large-scale inventory surveys using instruments such as *ASSIST* (Entwistle, Tait, McCune, 2000) to explore the approaches of groups of students over time in relation to specific teaching strategies.

Survey findings are also reported (McCune & Entwistle 2000) to have shown "general relationships between approaches and both students' grades and qualitative measures of their learning outcomes". More recently their survey approach has been combined with intensive, in-depth student interviews that have been introduced to generate more detailed insights into students' skills development in carrying out an approach and about the complex effects of differing learning environments.

CSCL

As our interest is in the effects of virtual learning environments we have also begun to engage with the literature on computer supported collaborative learning, as defined by McConnell, 1994:15), '*In the very broadest sense, co-operative learning involves working together on some task or issue in a way that promotes individual learning through processes of collaboration in groups*'.

The collaborative learning issues we have chosen to explore in this context via our research project resonate with those addressed by McFadzean and McKenzie (2001) in their recent discussion of the facilitation of *student* virtual learning groups.

They argue that traditional forms of teaching need to be adapted to better serve the needs of virtual learning students whereby the full potential of the virtual classroom as a means of enabling students to take control of their learning and of supporting experiential and collaborative learning will be realised. In practice this will mean that teachers will need to facilitate learning and group processes rather than instruct the learners or communicate information.

Mason's (1998) model (Figure 3) differentiates on-line courses by the extent to which they are characterised by collaborative activities to create three course types:

Figure 3	
Content & Support	Relatively static body of content (Web page) provides the core. Separation between course consent and tutorial support, relatively unchanging course materials and rudimentary amounts of collaborative activity
Wrap Around	Tailor made materials wrapped around existing materials.). The 50/50 model, online interactions and discussions occupy about half of the students' time, while the predetermined content occupies the other half. This model tends to favor a resource-based approach to learning, giving more freedom and responsibility to the students to interpret the course for themselves. The tutor's or teacher's role is also more extensive than that in the first model, because less of the course is pre-determined and more is created each time the course is delivered, through the discussions and activities.
Integrated	The course consists of collaborative activities, learning resources and joint assignments. The heart of the course takes place online through discussion, accessing and processing information and carrying out tasks. The course contents are fluid and dynamic as they are largely determined by the individual and group activity. In a sense, the integrated model dissolves the distinction between content and support, and is dependent on the creation of a learning community.

Our conception of the nature of effective networked learning is shaped by notion that is collaborative activities that make the essential difference between static content oriented courses and truly integrated and interactive courses that have the potential for learning communities.

THe research question

Our primary aim is to introduce computer supported collaborative learning (CSCL) into the module and evaluate its impact on teams of students undertaking assignments for assessment purposes and to answer the following question:

- Under what circumstances can CSCL enhance the effectiveness of full-time student teams?

RESEARCH METHODS

The research is part of a cyclical process of on-going reflective practice over the past three years of the module. The current research is an action research project to intervene in a specific context in order to improve our practice in this module and to generate generalisations for wider organisational dissemination and implementation.

We use a mix of qualitative and quantitative methods to capture the lived experience of the students at various stages of the module.

research DESIGN

The research is conducted in three stages:

Stage 1 – term one

Students complete the ASSIST questionnaire.

Stage 2 – term two

Student groups are introduced to the interactive and collaborative features of the VLE and are asked to opt for one of three group forms that vary the use of CSCL:

Traditional.

The group meets face to face and in real time. May use e-mail / telephone communication. Students keep minutes of group meetings. Students complete individual learning logs which record their experience of group work. Group produces written report of their research findings.

Supplementary.

Group has the option to meet face to face or to make use of some or all of the group functions of Blackboard. On-line monitoring of group meetings and communications. Students keep minutes of group meetings. Students complete individual learning logs which record their experience of group work. Group produces written report of their research findings.

Virtual.

The group meets via the group function in the VLE, in real time (synchronous chat room) and anytime (asynchronous discussion board). Document writing and exchange via web site. On-line monitoring of group meetings and communications. Students complete individual learning logs which record their experience of group work. Group produces written report of their research findings.

Student groups' reasons for their choice is captured via open response questionnaire

The lived experience of the students with regards to CSCL is further captured via tutor led group discussions and open response questionnaire on two further occasions.

- Measures of student usage are taken.

Stage 3

The effectiveness of the assignment groups is measured by:

- *task achievement*: assignment mark against stated learning outcomes

member satisfaction: student ratings of the experience of group work

Post test with ASSIST.

Data-analysis

In order to answer the research question in our data analysis we will identify and explore associations between variations in the effectiveness of the student groups and two variables:

the independent variable of student conceptions of learning and approaches to study

the intermediate variable of the degree of use of CSCL as defined by the group form adopted by the groups – traditional, virtual, supplementary

RESULTS

At this time we are only able to report on the initial findings from Stage 2 about students' first reactions to the opportunities for collaborative work and alternative communication forms presented by the VLE. At the conference we will report further on the findings of the lived experience of the students as they actively work in their groups to complete the assessed work.

Stage 2 Results

The assignment groups have been introduced to the VLE , student preference for group type and choice rationale are recorded via an open response questionnaire:

Student groups choosing traditional	33	24%
Student groups choosing supplementary	103	76%
Student groups choosing virtual	0	0%
Total number of student groups	136	100

Students opted for the traditional group form, because:

Face-to-face is seen as preferable to on-line interactions	34	40%
There is a lack of access to networked computer or a lack of computer skills	24	29%
The technology is not seen as reliable	13	15%

Student opted for the supplementary group form, because:

It offers flexibility and a mix of face-to-face and virtual communication forms	66	25%
As a back-up if the technology fails	8	3%

Of those students who opted for supplementary, they wish to have use of the virtual communication options because:

Of the anytime / any where communication opportunities	42	16%
They want to try something new and that might enhance their technical skills	29	11%
It offers a variety of communication forms	16	6%

Of those students who opted for supplementary, they did not wish to lose the opportunity for face to face interactions because:

Face-to-face interactions are seen as more effective – task achievement and interpersonal relationships	55	20%
They do not have easy access to a networked computer or possess the necessary IT skills	30	11%

DISCUSSION

It is significant that at this at this stage no groups have opted for the virtual form. This may be because these are first year students with little or no experience of on-line learning some of whom have ambiguous views towards technology.

Of those students opting for the traditional form, many have no off campus access to networked computers or feel that they lack technical expertise. At this stage their preference is for traditional face-to-face communications as they feel that this will be more beneficial in the achievement of group goals.

However other students also lacking technical expertise opted for the supplementary group form because it is seen as an opportunity to try something new and to develop technical skills that will be of use at university and for their future employment.

The students are, understandably, cautious in their views about the potential of virtual communication forms. Their 'anytime/ anywhere' capability is understood but the quality of interactions is seen to be higher in face-to-face groups.

This preliminary content analysis of reasons for group type selection suggests that we too readily assume that our first year students have relevant technical expertise and that the lack of access to networked computers might slow the full scale adoption of networked learning approaches at UWE.

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