Informatics Education Europe II 2007: Communications, Technology and Society – Use of Research Seminar Topics as part of an ICT Learning Program

Phillip Benachour, Nicola Longden

Department of Communication Systems, Infolab21, Lancaster University, LA1 4WA

p.benachour@lancaster.ac.uk

n.longden@lancaster.ac.uk

As part of their research seminars assessment coursework, undergraduate students in the Department of Communication Systems at Lancaster University are required to submit written research summaries on topics focussing on communications technology and its effect on society. This research analyses feedback obtained from students into their experience of the seminar classes and looks into methods to improve student participation. Specifically, this looks into the potential of using existing virtual learning tools to facilitate participation and the expression of opinions outside the classroom prior to and following the seminar debates and the use of other forms of technology assisted learning such as social and collaborative learning, the use of mobile platforms and audio and video blogs. The feedback obtained shows that a number of students would welcome the use of a virtual learning environment to enable them to participate and engage further in seminar debates and gain a positive experience of the subject area overall. We outline a proposed framework for integrating the use of technology into the teaching practice of the research seminar course to improve participation and the student learning experience based on this feedback.

Keywords

Blended education, Innovative methods in teaching and learning, Writing and plagiarism, Skills development

1. Introduction

The first year course in Information and Communications Technology in the Department of Communication Systems at Lancaster University is common to all first year undergraduates studying for a communications degree in this department. The ICT course can also be taken as an elective course by first year students enrolled on any other degree discipline in the University, including students from the Arts, Sciences and Media streams. This created unique challenges in the teaching of the ICT first year at Lancaster University because of the diversity of the students participating in the course and their level of education in technology.

The course has to be taught taking into consideration the needs of both potentially highly numerate and technologically aware student as well as students who may have no previous experience of ICT. The course aims to introduce first year students to information technology

from a theoretical and practical viewpoint and covers a number of areas relating to communication technology, engineering, the creative use of media technology such video, sound editing, animation and computer programming. Assessment is based on exams and coursework weighted at 60% and 40% respectively. The ICT course is comprised of three major teaching themes; a lecture series on the fundamental principles of ICT systems, a practical stream to give the students “hands-on” experience with techniques such as programming, scripting and simulation, allowing the students to critically evaluate the systems that they are learning to use and develop and a series of research seminar classes.

For each ICT seminar class, students are asked to conduct research into an area of technology, such as the debate surrounding mobile telephones and potential health issues prior to the seminar. They are required to write a shirt summary of their research findings and bring it to the class with them. A discussion or debate on the topic is then developed in the seminar class, while the students have access to their summary notes to inform the discussion.

The research seminar course is a key part of the ICT first year. It enables students to develop key skills in independent research summary writing, plagiarism awareness as well as encouraging debate and the exchange of ideas and opinions with peers. In addition, the research seminars helps to raise awareness of social, technical and health issues relating to contemporary communication technologies, an important aspect of the ICT curriculum. The written summaries also form an element of assessment for the course.

In this paper, we present the results of detailed feedback obtained from six classes of ICT students in the 2006-2007 academic year and show how we have used this feedback to create a framework for integrating the use of technology into the teaching of the course. In particular, we propose the use of online debates in order to increase student participation and learning. In Section 2 the topics covered in the research seminars are outlined. This section describes a case study of a typical teaching session and a plagiarism workshop to highlight current teaching practice. Section 3 focuses on improving participation by describing the issues arising, how best to integrate online discussions and engage students. Based on student feedback, a proposed framework for integrating the use of technology into the teaching practice of the research seminar course to improve participation and the student learning experience is described. Section 4 concludes on the work carried out and outlines future research in this area.

2. Seminar Topics, Assessment and Evaluation method

In the 2006-2007 academic year, eight seminar topics were used for the research seminar course in the ICT first year. Each topic was selected so that it focussed on at least one of the following areas: technological development, education and learning, effects on society, ethics and health issues. The topics used are as follows:

1. Mobile phone health risks
2. Biometrics and its use in security
3. RFID technology
4. Computer assisted learning
5. Digital divide
6. Computer security and privacy

7. Computer games and their use in edutainment
8. File sharing and copyright issues

As the students are required to submit 8 written summaries throughout the academic year, these provide a unique opportunity to monitor and assess the development of the writing skills of the students in their first year. In addition to the seminar discussion classes, workshops on writing skills and plagiarism avoidance were integrated into the curriculum for the course with the aim of enhancing the development of key skills in these areas.

To evaluate the effectiveness of the seminars and workshops as part of the learning experience for first year ICT students, a questionnaire was completed by each student taking part in the seminar group. The questionnaire was aimed to draw conclusions on the following points:

- How useful were each of the seminar topics in raising awareness of social, technical and health issues linked to them?
- What were the sources that were used in order to carry out each piece of research?
- How effective were the writing skills and plagiarism workshops in helping with their summary submissions?
- How much time did the students spend researching each topic and on writing the summary?
- Did the students feel that the seminar group dynamics effected their participation? And if so why?
- Would students consider participating in these debates using web based forums as well as attending the seminars?
- Would students consider other forms of learning such as social and collaborative learning such as mobile platforms, audio and video blogs?
- How would the students conduct their research if they were to repeat the seminars again? What would they do differently and why?

The overall aim of the questionnaires is to facilitate improvements in student learning, writing and research and participation. One of the key aspects of this is feedback from the students on the role of web based technology in improving their participation and learning experience and whether they felt that they would benefit from systems such as online discussion forums or novel uses of media. This should form the starting point for the development of a frame work to supplement and enhance the teaching in the classroom, moving towards blended and informal learning and to support the e-learning strategies proposed by the University.

2.1 Case Study: Digital Divide

One of the research topics in the ICT seminar course is the digital divide. The digital divide is the widely used label for a range of policy debates since the mid-1990s about the spread of access to the Internet and other forms of digital media [1]. The term *Digital Divide* emerged from the 1980s when the vision of an *Information Society* in which the possibilities for knowledge transfer and social change would be transformed by new technology based on mass production of computers, the digital revolution in home entertainment and an increased flow of information through telecommunications.

The debate about the *Digital Divide* intensified in the 1990s with the emergence of the *Internet* where global communication using emails and the sharing of multimedia data became a practical reality at a relatively low cost. This debate spans political and academic domains because it links national and international issues about who is getting quality information from the Internet, and how often this information is available. This isn't only an issue for poorer countries, as it has be known for sometime that in western countries this divide is set to continue in the future [2]. Research by British Telecomm [3] has concluded that in 2004, 51% of adults in the UK were digitally excluded. This figure was consistent with the finding of the UK's Cabinet Office which found a similar proportion of the population to be *digitally disengaged.* The research also found that digital exclusion in this case was not only associated with problems of access such as income, the ability to pay for technology, disability and skills gap; but also with engagement where people do not see the need to engage with new technology and do not perceive the benefits of the online world. Researchers at FutureLab [4] argue that the digital divide continues to present a serious and significant threat to the establishment of the UK as a successful digital society. The research also shows that there is overwhelming evidence that as *Information Technology* becomes embedded into the fabric of everyday life then the divisions in technology use are strengthening rather than diminishing. Simultaneously, individuals from all sectors of society can be considered as being digitally disadvantaged – not just those who are socially excluded in general.

The digital divide in eastern and south-eastern Europe has also been debated in order to narrow the gap in the divide [5, 6, 7]. The debate about the digital divide seems to be operating on different scales, where different considerations should apply. On the one hand, the international debate would seem to concern the divide in Internet access between nations; on the other hand, governments have been concerned about the divide within nations, or at least within their own nation. Questions also arise about how individuals access the Internet differently which in turn has implications for the meaning of the 'Digital Divide' and the quality of people's Internet use.

From a research and course work viewpoint, students were presented with a brief summary on the digital divide and are asked to perform some research and submit a summary on the following questions:

- What exactly is the Digital Divide, Who exactly is divided and how?
- What measures are taken by the UK and other governments around the world to address such a divide.
- How do individuals access information on the Internet and how would you define the quality of your Internet use?
- Think of other examples (other than the Internet) where a digital divide exists.

The topic of the digital divide created lively and varied discussions and debates. This is attributed to the number of perspectives on the issue and the many ways in which the topic can be addressed. Additionally, the topic may have particular significance to the class of ICT students as they may feel divided on the basis of their access to and experience with computers and other forms of technology. The feedback obtained from about this seminar class showed that the students felt that it raised their awareness of social and technical issues and, in some cases, health issues as well.

2.3 Writing and Plagiarism Workshop

One of the aims of the first year seminar programme in ICT at Lancaster University is to help the students enrolled on this course to develop their writing and research skills. The development of discursive skills are fundamental to student learning in a scientific discipline as they enable students to express the knowledge and understanding that they have and aid learning of a subject [8].

Both the writing and plagiarism workshops are part of the first year skills development and awareness themes. Plagiarism awareness is of particular importance to this course as the research seminars require students to conduct research on a given topic and write up summaries based on the information that they obtain. The students typically use multiple sources in their research. Feedback obtained from students taking the course in the 2006-2007 academic year has shown that all students used Internet sites to get their information, 30% used books and news papers and 15-17.5% used journals and magazines. The Internet provides an invaluable source of information but also provides an easy source for copying materials [9]. Additionally, students perceive copying information from Internet sources as "less dishonest" than copying from printed sources [10]. As all students on the ICT seminar course use the Internet for their research, the prevention of plagiarism is particularly important.

The University has developed and approved a framework to deal with plagiarism by students The University defines plagiarism as a piece of coursework that “involves the unacknowledged use of someone else's work, usually in coursework, and passing it off as if it were his/her own”. First year students are made aware of the University’s policy on plagiarism and the consequences if plagiarised course work is submitted. This does not however give any practical advice on how to avoid plagiarising work with different subject areas. In many cases, especially in the first year, students do not know how to avoid plagiarism even though the intention was not to plagiarise in the first place.

The plagiarism workshop for research seminars was developed in conjunction with the Student Learning and Development Centre (SLDC) at Lancaster University in order to help students avoid plagiarism. Working with the SLDC ensures that the workshops are developed by people with experience in the field of writing skills and plagiarism avoidance as well as teachers with domain knowledge of ICT. The workshop is based on giving the students practical experience through participation in group exercises. Each seminar group has between 15 to 20 participants, small groups of 3 to 4 students are formed in order to complete the plagiarism exercises. The exercises used are as follows:

Exercise 1 – What is plagiarism?
The first exercise requires students to read through a handout entitled “What is plagiarism?”. The handout contains 11 methods of using other people’s work. Each group is required to identify which method constitutes plagiarism and which are acceptable practices. These are then discussed as a class and the reasons why particular practices are considered to be plagiarism are presented to the students. The aim of this exercise is to engage the students on the topic of plagiarism and to tell them which practices are acceptable and why.

Exercise 2 – Summarising Sentences
Each group is required to read the handout entitled “Sentences for Summarising”. The handout contains three sentences which the students must summarise in five words or less. The summarised sentences are then presented to the class. The aim of this exercise is to

encourage the students to think critically about the presentation of information and to try to write accurately and concisely, important skills in scientific writing.

Group Exercise 3 – Summarising an Article
Each group is required to read a handout containing an article entitled “Games make drivers go faster”. Each group must then summarise the article into one paragraph of 50 to 75 words. The summaries produced the groups were submitted and put on the University’s Virtual Learning Environment (VLE) anonymously as a source of reference for the other students. The aim of this exercise is to practice skills in summarising large quantities of information and to show students how a single piece of source material can generate very different summaries.

The effectiveness of the plagiarism and writing workshops can be evaluated from comparing the written summaries of students before and after attending the workshops. In a number of cases, the use of referencing improved, however some students continued to struggle with the appropriate use of citations in the body of text and the information required for complete referencing. This implies that further work is required in these areas.

Feedback obtained from students has shown that 70% said the workshop has increased their awareness of plagiarism. 60% said it has helped them identify the difference between plagiarised and non plagiarised material. 42% said it has demonstrated how plagiarism can be avoided using practical examples. None of the students believed that the plagiarism workshop had no effect. General feedback from students about seminar research and summary writing showed that 82% of students would use more resources when conducting their research than they had previously, 62% of the students would spend more time researching each topic and 52% of students said that they would use resources to find factual information about a topic

3. Improving Participation

3.1 The Issues

The discussion seminars are an integral component of the first year ICT course at Lancaster University as they are used to provide students with the opportunity to develop key skills in research, writing and discussion and teach an important element of the curriculum; issues in communication and information technology and the potential effects on society. The seminar topics are also used for assessment in both coursework, through the submission of written summaries for each topic, and as an element of the final examination.

One of the main problems with the use of a discussion group as a form of student learning is that students must be present in the session. Additionally, student participation in the discussion is imperative for the class to be a useful learning experience [11]. Observations of students in the first year ICT seminars has not shown a correlation between participation in class discussion with attainment in the written seminar summary assessment as the summaries are required to be written prior to the discussion class. However, students that do not engage in the discussion do not have the opportunity to develop their presentational or debating skills. There appears to be a number of factors affecting whether a student will participate in the seminar discussion. These include a general reluctance to speak in front of the class and a general apathy about the topic or course, which are problems encountered in

all discussion classes. The first year ICT seminar course has the additional problem that students from a technical or scientific background have tended to pursue their research into the seminar topics from a different perspective to that of the students from a non-technical background. While this can lead to interesting discussions, bringing together the different perspectives, it can also lead to non-technical students believing that their opinions are less valid as they do not have the technical knowledge to reinforce their views.

One method for increasing student participation is to use technology to enable the discussions to be continued outside the classroom. Online discussion forums are regularly used as a component of distance education in higher and adult education as a means of promoting interaction between course participants [12]. Discussion forums create an environment similar to the face-to-face classroom environment where knowledge can be critically constructed, validated and shared [13]. As the use of discussion forums has grown, an increasing number of researchers have attempted to produce models that measure and analyse the networked conversations produced [14]. Corich et al, [15] looked at the role of asynchronous discussion forums in e-learning and attempted to address the issue of the quality of interaction of discussion forum participants. Two measurement models [16, 17, 18] were used to measure activity and assess the quality of forum contribution for students participating in a first year undergraduate degree course. Computer–mediated communication (CMC) has also been used by various researchers in distance education training [19] and comprises various forms of electronic communication including synchronous chat, audio and video and asynchronous conferencing, email, and file exchange. Research [20] has also shown that an increase in student participation in an online course results in increased learning. As a result, many online instructors, in the hope of improving student participation, include discussion forums in their online courses. However, inclusion of discussion boards, argues Virk in [21], does not automatically ensure increased learning and student satisfaction. Understanding how students participate in an online course is the first step to determine how to best engage students.

3.2 Feedback on Participation

A further consideration associated with the ICT seminar discussions is the variability of class size. The maximum size of class has been restricted to 20 students to maximise the opportunity for each student to participate in a discussion. In practice, class size typically varies from 5 to 15 students. A concern was that the small groups may have insufficient students for an effective discussion with a variety of opinions to be established. However, the feedback obtained from the students in the 2006-2007 year showed that 60% of the students felt that the size of the group had no effect on their participation in the discussion while 40% of the students believed that it had a positive effect. None of the students believed that the class size negatively affected their participation.

When the students were asked about participation outside the classroom, 70% of students said they would consider participating in online debates using web based forums as well as attending the seminar. A similar percentage said that they would consider using others forms of learning such as social and collaborative learning and the use of mobile platforms, audio podcasts and video blogs?

3.3 Building a framework for online participation

In order to build an effective and successful framework for student participation, it is vital that the online participation improves the student learning experience. This learning experience will work if we are able to understand how students participate in an online course and how best to encourage and facilitate effective participation [22]. There are a number of commercially available online discussion tools in the market [23]. Many of them can be integrated into the teaching practice of the research seminar course to improve participation and the student learning experience. Online Engagement and participation must be structured and tutor lead. In fact, online discussions should mirror discussion seminars in the classroom where the tutor's task is to keep participants interested and focussed. Based on our experiences, a well planned session is rewarded by student participation and increased attendance.

In order to create a solid framework for successful online discussion, the following 10 requirements need to be considered:

1. Online discussions require structure to assist students in maximising the learning outcomes. This is particularly important for first year students where a lack of formalised structure can lead to poor participation and even confusion.
2. Structure the discussions with specific and clear learning outcomes for each seminar topic.
3. Comprehensive planning prior to providing access to on-line discussions is crucial to ensure pedagogical goals can be met.
4. Encourage regular co-operation amongst students and between educator and students.
5. Online discussions should be made a part of the assessment to ensure student participation.
6. Place equal value to face-to-face and online collaboration and interaction.
7. Assessment through content analysis.
8. Regular participation of educators with students; thereby modelling the evaluation behaviour and level of discourse.
9. Use students to peer-assess every message they reply to.
10. Research, monitoring and testing of pre and post attitudes towards collaboration and interaction of both educators and student in on-line discussion groups in order to provide useful information about the relevance of discussion from the student's perspective.

3.4 Success Criteria and Evaluation

The success criteria will be based on how effective the proposed framework will be in engaging students in online discussions. Monitoring participation and the quality of discussions will provide a good insight into student attitudes towards this exercise. The impact of the instructor's presence will also be monitored in order to find out if this has an effect on student participation. In addition, a study into the effect of online discussions on student performance in the face-to-face discussions will be monitored. This will give an indication of any improvements made by the students. Another way of achieving this is to compare student or a group's engagement by running a number of seminars with a

structured online discussion and compare them with seminars without online discussions. Finally, understanding how students participate in an online course is an important step to determine how to best engage students.

6. Conclusions

Results from student feedback have shown that student experiences of the research seminar as an exercise have been very positive. Students felt that the topics chosen were good in raising awareness of issues on health, technology and the effects on society. Most students felt that the writing and plagiarism workshops helped them to write a more structured summary, and that it helped them to learn how to avoid plagiarism. One of the areas the authors focussed on was group dynamics and sizes. This was of particular importance because it was felt that for some, (2-3 years), a percentage of students tended to dominate the session and this effected the attendance and participation of others. It is one of the reasons why other forms of participation were considered for sometime but no feedback data was collected until this academic year. The aim here is to facilitate student learning and improve their experiences and participation. Additional feedback has shown that the majority of students would welcome an additional method of participation in the form of posting their opinions and thoughts on each topic before the seminar took place. A framework for online participation has been proposed and a criteria for success specified.

References

1 Couldry N. The digital divide. Web. studies 2nd edition, published by Arnold; 185-195. 2004.

2 Benachour P. The state of the digital divide in the UK and Europe. International conference on sustainable regional development. Manipal Institute of Technology, Sikkim, India, February 2007.

3 British Telecomm. The Digital Divide in 2025: An independent study. December 2004. http://www.btplc.com/Societyandenvironment/PDF/Digitaldivide2025.pdf

4 Selwyn N., Facer K. Beyond the digital divide: Rethinking digital inclusion for the 21st century. Futurelab, June 2007.

5 Bissio R., Curry W, Esterhuysen A. The digital divide: a review of ICTs in Africa, Asia and Latin America, Global Information Society Watch, 2007;

6 Centre for democracy and technology. Bridging the digital divide: Internet access in central and eastern Europe. http://www.cdt.org/international/ceeaccess/. 2000

7 Simerska L., Fialova K. Bridging the gender digital divide: ICT and gender in Central and Eastern Europe and CIS. Published by United Nations Development Fund for Women. 2004.

8 Brown B.A., Reveles J.M., Kelly G.J. Scientific literacy and discursive identity: a theoretical framework for understanding science learning, Science Education, 8, 779-802, 2005

9 Eysenbach G., Report of a case of cyberplagiarism – and reflections on detecting and preventing academic misconduct using the Internet. Journal of Medical Internet Research, 2, 2000

10 Baruchson-Arbib S., Yaari E. Printed versus Internet plagiarism: A study of Students' perception. International Journal of Information Ethics, 1, 2004

11 Gross Davis B., Tools for Teaching, Jossey-Bass.1993

12 Spatariu, A., Hartley, K., Bendixen, L.D. Defining and Measuring Quality in On-line Discussion. Journal of Interactive Online Learning. Vol 2(4), 2004.

13 Knuka, K., Anderson, T. Online social interchange, discord, and knowledge construction. Journal of Distance Education, 13(11), 57-74, 1998.

14 Campos, M. A Constructivist method for the analysis of networked cognitive communication and the assessment of collaborative learning and knowledge building. Journal of American Learning Networks, 8(2),1-29. 2004.

15 Corich, S., Kinshuk, Hunt L. M. Assessing discussion forum participation: in search of quality. International Journal of Instructional Technology and Distance Learning (ISSN 1550-6908). Vol 1. No. 12, 2004.

16 Henri, F. (1992). Computer conferencing and content analysis. In A. R. Kaye (Ed.), Collaborative learning through computer conferencing: The Najaden Papers (pp. 116-136). Berlin: Springer-

Verlag.
17 Hara, N., Bonk, C. J., & Angeli, C. (2002). Content analysis of online discussion in an applied educational psychology course. Instructional Science, 28, 115-152.
18 Garrison, D. R., Anderson, T., and Archer, W. (2001). Critical Thinking, Cognitive Presence, and Computer Conferencing in Distance Education. The American Journal of Distance Education 15(1), 7–23.
19 Garrison, D.R. Theoretical challenges for distance education in the twenty-first century: A shift from structural to translational issues. International Review of research and Open and Distance Learning, 1(1). 2000.
20 Roblyer M.D. & Ekhaml, L. How interactive are your distance courses? A rubric for assessing interaction in distance learning. Online Journal of Distance Learning Administration, Volume 3, Number 2. 2000.
21 Virk, B. A Balancing Act: Improving Student Online Discussion Participation. International Journal of Instructional Technology and Distance Learning (ISSN 1550-6908). 2004.
22 Ho, S. Evaluating students' participation in on-line discussions. Eighth Australian World Wide Web Conference (AusWeb 2002), Queensland Australia. July 6-10, 2002.
23 Marshall University, USA Comparison of Online Course Delivery Software Products: http://www.marshall.edu/it/cit/webct/compare/index.htm,