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Internet Cafes as Alternative Training Environments: Reflections on a Bulgarian Experience

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ABSTRACT *In-service education of teachers (INSET) in science and Information Communication Technology (ICT) is particularly demanding when working in under-resourced locations or where resources are in heavy demand. This article is based on ICT/science INSET delivered by the authors working with twenty-two primary science in-service teachers and one university lecturer in a Bulgarian Internet café. The use of alternative (novel) learning environments, and the selection and delivery of teaching materials are discussed in the light of participants' evaluations. The implications for constructivist learning environments, situated learning contexts, theories of the social perspectives of education and the active engagement of the learner are also explored.*

KEY WORDS: ***INSET***, *alternative learning environments, technospace, situated learning*

Introduction

During the last twelve years, an unprecedented level of financial investment in improving the physical resource base for information and communication technology (ICT) has occurred in both mainstream and preschool education in the UK. It is now common in primary schools to find ICT delivery being supported by modern machines either in small numbers in individual classrooms or in larger numbers in purpose built ICT suites. Government data shows 99% of all schools have Internet connections (DfES, 2003, p.16) and by 2006 it is intended that all schools will have fast Broadband access (ibid, p.3). Many machines are supported by an impressive array of accessories, such as interactive white boards, digital cameras, flat bed scanners, web-cams, and digital camcorders. Despite having these facilities, ICT is still under-used in many science lessons (QCA, 2004, p. 18). Consequently, when we were invited to support a Bulgarian colleague by delivering an 'active learning in primary science' training session to Bulgarian primary teachers, we did not anticipate what a contrasting experience this would be. The course participants were twenty-two experienced local primary school teachers from the city of Plovdiv who had enrolled on an INSET course focusing on 'active learning in primary science' at the University of Plovdiv. Our Bulgarian colleague, Ani

Epitrova, had facilitated this training event both as part of her own professional development and as part of a Commenius 2.1 project called 'SySTEM'[1] A central aim of this project was that each partner institution will produce a training module to form part of a post graduate qualification in primary science education; the Bulgarian training module being developed to promote 'active learning' in primary science. Consequently, this INSET event had to address both the more fundamental needs of the primary teachers and also those of their CPD-trainer, the university lecturer.

In preparing for this training event, a number of key questions needed to be addressed:

1. What is the level of ICT skills of the teachers?
2. How will difficulties linked to use of language be addressed?
3. What choice of primary science focus best supports the aims of the training session?
4. How will we actively involve the teachers in their learning?
5. What is the resource availability?
6. Will technical support be available?

It emerged that the level of ICT skill was insufficient to meet the demands of the planned activities, and that most participants knew very little English. Computer facilities at the University of Plovdiv did not meet the session requirements, and it was difficult to provide technical support. Consequently, our Bulgarian host made the inspired decision to locate the training event in an Internet café and its value, as an alternative learning environment, is a central feature of this article. This context had an influence on the structure, content, and mode of delivery of the training session.

Language difficulties were partly addressed by choosing a modelling type of program called Crocodile Clips Elementary[2], (Crocodile Clips Ltd., 1994) requiring very little use of English. The science focus, simple electric circuits, enabled us to minimise the need for advanced English, while allowing participants the opportunity of exploring and critically evaluating a relevant educational resource in terms of effective teaching in both ICT and primary science. Furthermore, this choice had the added advantage of replacing or complementing practical activities that are normally difficult to carry out in schools challenged by the provision of adequate resources. Software was chosen that was easy to install, simple to use, would run in any Windows format, had been released for free distribution, and would promote active involvement of both teachers and pupils.

[1] Project: SySTEM 94343 CP_1_2001-1-PT-COMENIUS-C21/09 is a multinational endeavour to produce a pan-European postgraduate qualification in primary science. Partner institutions are from Poland (three universities), Sweden, Estonia, Portugal, Czech Republic, Bulgaria and the UK. All members are actively engaged in developing teaching and learning modules that address a wide range of science education components such as the nature of science, formative assessment, global education, cognitive motivation and developing science conceptual and procedural understanding through environmental education. The project is due to end in the summer of 2004.

[2] Crocodile Clips Elementary – free downloadable copy available at: www.curriculumonline.gov.uk

Three IT lecturers from Bradford College, all with a keen interest in continuing professional development (CPD) particularly in the field of science education, delivered the session. 'Crocodile Clips Elementary' was identified as particularly suitable software. It addressed an area of science education, electricity and simple circuits, that many teachers find challenging not least because of resourcing issues, such as a lack of equipment, problems with bulbs of different resistance and bad connections; in many ways, this software offers idealised situations to explore electric circuits.

Useful time was spent with all participants discussing and identifying a rationale for the use of ICT generally in education, but more specifically in primary science that is informed by the following principle: if the use of ICT does not add anything to the lesson – do not use it! Five features of good practice in ICT education described by Bacon et al (2001, pp.2-16) further guided this notion of fitness for purpose.

1. ICT Capability. Pupils develop the knowledge and skills that enable them to use new technologies efficiently and effectively.
2. Creativity. Pupils' creativity is inspired by their use of ICT. They find opportunities to be creative using ICT, and to use ICT creatively, in a wide range of subjects and contexts, throughout their school life.
3. Quality. Pupils use ICT to develop their ideas and improve the quality of their work. They use ICT to enrich their learning, making use of the wide range of source material available to them. Where appropriate, they also use ICT to improve the presentation of their work.
4. Expand possibilities. Pupils use ICT to make practicable learning activities that would otherwise be too onerous, difficult, time-consuming or impossible to achieve. Pupils use ICT to add intrinsic value to a process.
5. Autonomous learning. Pupils develop autonomy through their use of ICT. They take control of their learning both at the level of concept understanding and skill development. They engage with the technology and work independently or with others, at the most effective pace and at the most appropriate level. They articulate reasons for their use of ICT. This is likely to be the greatest challenge facing both the subject specialist teacher and generalist teacher.

The rationale for the use of ICT within science focused on meeting the generic educational objectives previously outlined and actively engaging participants in their own learning in science. ICT provides learners with opportunities to become more independent, so encouraging them to take greater responsibility for their learning in the wider curriculum: a central focus of the SySTEM module being studied by the teachers at Plovdiv University. We wanted to explore to what extent ICT promotes both the opportunities and possibilities for learning science through access to a range of opportunities denied by traditional teaching methods. Such experiences range from data capture and manipulation to the use of computer modelling of scientific experiments and gathering information from the Internet. Finally, to what extent does ICT offer an opportunity for learners to co-operate with others in locations ranging from the local level through to the international arena, via email or video conferencing? A claim worth evaluating with our Bulgarian colleagues.

The INSET session also addressed a number of different approaches to subject specific teaching:

Modelling type activities. Practical work can be difficult because of cost, lack of equipment, resource reliability, classroom management issues, heath and safety issues, or a combination of all of these. Modelling can simulate practical work with fewer such problems although different challenges emerge.

Data Manipulation. The topic selected was the use of spreadsheets to carry out repetitive and/or tedious mathematical computations. This included generating graphs from experimental work, dynamic linking of data capture, data presentation and modelling activities, all developed using spreadsheets.

Replacement activities. In this context the computer enhances or even replaces the normal classroom activity. Pupils use ICT to make practicable learning activities that would otherwise be too onerous, difficult, time-consuming or impossible to achieve. This use adds intrinsic value to a learning experience, such as a using a digital microscope to support an investigation into the structure of different fabrics.

Two additional but critical pedagogical points needed to be examined, the first being, *Training and Equipment.* Teachers need training, not only in the mechanical skills to use the equipment, but also in the pedagogy surrounding its effective use within the classroom. The second point explored was *Tokenism.* We believe ICT is most effective when it is embedded within the curriculum (QCA, 2004; Harlen et al., 2003) and in the Primary National Curriculum for England and Wales (DfEE 1999), it is explicitly identified as an important component of all subjects, with the exception of Physical Education. Effective delivery of ICT is still a developing area in most of these schools and the Office for Standards in Education (Ofsted, 2002) observe 'In most schools the development of ICT has been a whole-school priority' and further 'There remains a minority of schools that have failed to make adequate progress.' Participants' appreciation of the theoretical nature of these issues initially relied heavily on the skill of the translator, but, as the session moved to focus on the software, this problem appeared to become less significant.

The graphical nature of the 'Crocodile Clips Elementary' software facilitated its use by the teachers and so required very little introduction. Teachers, both independently and collaboratively, quickly explored and constructed various types of circuits on their own initiative, which provided an opportunity for all to achieve some level of success. Teacher evaluations indicated that this was a valuable and beneficial experience, even though it was based upon a challenging subject area of science. In the following discussion, teachers focused on how they would use this resource in their own school setting.

Responses included:

'Practical work is limited by equipment and preparation time, and this program could be used to overcome some of these issues'.

'The children would be actively engaged in their learning - like we were today'.

'There needs to be a reorganisation of the way we run our classes to allow the use of the small number of computers available to be used effectively'.

Our next focus was to examine some of the advantages and disadvantages of using web-based materials using the BBC site (http://www.bbc.co.uk/schools/revisewise/science/physical/11_act.shtml). Although the language medium is

English, excellent navigation organisation, a good interactive structure and its relevance to 'Crocodile Clips Elementary' determined final choice. Excellent Internet connection speeds provided by the Internet café eliminated any issues with slow connections or slowly loading web pages; an important consideration, since the site we used employs Flash animations that are big files.

During this session, staff of the Internet café became interested in what was happening and joined in. One spoke excellent English and started helping students work through the site, while at the same time providing technical support. The combination of his technical expertise, good use of English, and active support, was an unexpected advantage. Teacher responses relating to this work were wide ranging, from:

Being generally very enthusiastic.
An interest in the use of passwords.
Surprise at the free access.
Enjoyment of the animations.
Their pupils would appreciate the diagrams were close to those they were used to.
This web-based program was more complete in that it included assessment materials that the pupils could complete.
Liked how marking online giving instant feedback.

Although not specifically identified by the teachers, it was evident that in Bulgarian primary schools stand-alone software has more value than Web-based applications due to limited Internet availability. The need for some competency in English to access the assessment materials negated the advantages of this web-based delivery. Feedback for the session was gleaned by way of a modified evaluation proforma (see Figure 1) previously used in our own institution and translated into Bulgarian. Nearly 40% of the evaluations were completed, which provided useful information.

Figure 1. Evaluation proforma

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SESSION REVIEW - STUDENT

1. **Aims and Objectives:** Please comment on the aims and objectives of the session and extent to which you feel these were achieved and are current and professionally relevant.
2. **Content:** Please comment on the content of the session, the workload and whether you feel your own knowledge and key skills were developed.
3. **Methods of Teaching and Learning:** Please comment on the methods of teaching and learning within the session (e.g. balance of activities and appropriateness of content)
4. **Resources:** Please comment on resources availabe for the session.
5. **Please identify two of the strongest features of the session**
6. **Please identify two of the weakest features of the session**
7. **Other comments:** If you have any other comments please use the reverse of this sheet.

Conclusions and Discussion

The Internet café has the capacity to become an extended classroom for a variety of educational activities delivered outside of formal education structures and

systems. School children, those involved with Further Education or Higher Education could all benefit from this relatively cheap, expanding, and reliable resource. Thai Internet cafes were closed because of a gaming curfew and from December 2003 redirected into providing computer skills and English language development (http://www.thaipro.com/thailand_00/165_internet_cafes.htm)[3]. There is a rapid growth in the establishment and use of networked PCs in cyber-cafés, kiosks, and a wide range of community buildings used in many African countries, combined with teacher training in Internet use and integration into teaching programmes, to support educational endeavours. Further, a network of 'cyber-clubs' can now be found in Senegal that promotes both pupil-pupil and teacher-teacher communication that, to some extent, overcomes many of the difficulties associated of geographical isolation (Technical Report for CDCS, 2002).

These observations indicate the educational capacity of these technospaces is not only recognised but also very likely to be rapidly growing. Our own experience suggests that the Internet café offers considerable potential as a legitimate and relevant context in which to provide focused training events of the type described in this paper. There have been many publications describing incidental educative experiences (see Lee, S. 1999; Laegran, A. S., 2003, 2003b) but little that examines the use or potential use of this valuable resource. World-wide there are now a vast number of Internet cafes (over 5000 are identified on the web) and while, in the UK and other similarly well-resourced countries, there is less demand to expand ICT-INSET into Internet cafes, this is clearly not the case where resources are very limited. Specialist ICT teaching rooms in our own institution are in constant heavy demand, which suggests that some use of this alternative educational setting could also be of benefit in resource-rich locations.

It will be clear that our pedagogical approach is informed by the desire for active engagement, communication, social interaction (including co-operation and collaboration), challenge, and the belief that the process of education should not be confined to the classroom, and that a multitude of contexts exist in which this can occur. Our use of the Internet café has the characteristic features of a constructivist learning environment (CLE); namely, students are kept active, constructive, collaborative, intentional, contextual, conversational, and reflective (see Jonassen 1999 and http://www.coe.missouri.edu/jonassen/courses/CLE/main.html). Furthermore, the value of a socially embedded experience provided by this alternative educational environment (one appropriately matched to the teaching and learning foci) should not be discounted. A complementary but slightly different view of this type of educational experience is the 'situated learning approach' (Brown et al., 1989; McLellan, 1995; Stein 1998). This recognises that learning will be promoted by a sociocultural approach that is active and embedded in meaningful contexts (real world).

What impact did we have on other café-users and vice versa? Noise from the rest of the Internet café was not problematic; in fact it was quiet. Other 'users' had

[3] Finding the location of an internet café or cyber café is best done using the internet (see http://cybercaptive.com/ or http://www.netcafeguide.com/mapindex.htm) although a useful rule-of-thumb is that Internet cafes can be found close to any university or other higher education institute.

headphones, so we were spared the screams of dying heroes and villains and the screeching tyres of rally and racing cars. We made the most noise and yet had no obvious visible detrimental effect on the rest of the Internet café other than to be a cause of curious enquiry itself, a desirable scientific attitude to encourage. Some consideration needs to be made regarding the layout of the Internet café. Our experience, however, suggests separate rooms are not essential, although they may be desirable. What is important is that there is an identifiable section that can be utilised for the planned activities and tasks.

Before our experience in Bulgaria, we had not seriously considered the Internet café to have any more educational value than as a setting in which users might send emails, play games, or search the Internet for a variety of purposes. We believe that this technospace provides enormous educational potential especially in those locations where ICT resources are in short supply. To use it solely for ICT training would be limiting, although clearly there are huge opportunities to do just that. Our use of the café to train Bulgarian teachers about electric circuits suggests that there may be wide-ranging possibilities for the extension of INSET into other subject areas.

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