PEDACTICE - The Use of Multimedia in Schools

by Roger Slack

The growth of information and communication technology (ICT) in society is reflected in policies to encourage the use of ICT in education and the development of educational multimedia. As the role of educational multimedia increases, it is increasingly important to have an idea of the potential it affords for teaching and learning. This *Briefing* reports on the PEDACTICE project which considers teachers' experience and assessments of multimedia, its impact on their teaching and on pupils' learning and how the use of multimedia in education can be effectively supported.

➤ **Government** policy on the National Grid for Learning is driving the uptake and use of multimedia and internet in schools. The use of CD-ROM and the internet is becoming an integral part of the curriculum in all areas.

➤ **The** introduction of multimedia into the classroom has a profound impact on teachers' role and on students' learning and motivation.

➤ **The** current management and resourcing of ICTs does not allow teachers using multimedia to exploit the full potential of the technology in their teaching.

➤ **Research** suggests that teachers are keen to integrate ICTs into teaching and learning but find it difficult to know what to select from the array of available products. There is a perception that multimedia products sometimes do not function as described by manufacturers.

➤ **Teachers** need information on the capabilities of multimedia packages and their suitability for classes. PEDACTICE is developing a database for this purpose in partnership with teachers.

➤ **Support** by other teachers with an expertise in ICT is vital to the uptake of multimedia in schools but being used as an ICT expert adds another task onto already overworked teachers.

Background

PEDACTICE deals with teachers' experience of multimedia to develop an idea of best practice. The project asks teachers to reflect on their practice and to explain their uses of multimedia by means of video taped records of teaching and learning using ICTs. Their experiences are reflected in the development of the European Multimedia Resource Library (EMRL), which will be a repository for evaluation and experience of multimedia products in context. Broadly, the project has three basic areas of interest, which can be summarised as follows:

➤ The pedagogical implications of educational multimedia in compulsory school teaching.
➤ Evaluation of classroom experiences with innovative teaching methods using multimedia.
➤ An analysis of teachers' assessment of educational software.

The impact of multimedia on styles of teaching and learning

While research on this is at a preliminary stage, it is possible to say that the introduction of multimedia into the classroom has a profound impact on styles of teaching and learning. Students are seen to be more motivated when using multimedia, which one teacher described as 'using the multimedia "hook"'. Teachers have stated that multimedia enables students to work at a different pace, and some packages can be tailored to student needs. Teachers have also suggested that they regard students as learning co-operatively when multimedia is used. The teacher becomes a facilitator, problem setter and guide as opposed to taking a central role. Indeed, the media competence of some students enables them to navigate through CD-ROMs at least as effectively as some teachers. We suggest that further research is needed before such anecdotal claims are accepted.

Managing the introduction of multimedia into the lesson is also interesting in that teachers have to stop students doing their current work and (usually) get them to gather round the computer in order to use the package. In these cases the teacher operates the computer and teaches through the package. Arguably, this mode of teaching, necessary though it is, does not exploit the features of the technology to anything like their full extent. *In other words, organisational exigencies force teachers using multimedia to teach in a less than optimal manner.* Students being taught this way noted that the lesson was uninteresting as compared to their experiences of computers in other lessons and, as importantly, at home.

Where students can use a computer individually or in groups there is the issue of who goes first and how this is managed within the classroom. In only one setting were students able to use computers at their own desks, an exercise that required the teacher to book the 'computer centre' three months in advance. A number of teachers observed that they would be happy to use multimedia so long as they had 'enough computers for my students'. There is an important issue here regarding the trade off between use and utility: one needs to have enough computers to teach effectively, but computers are costly and have to be used intensively to justify the investment. It would appear that computer laboratories provide a short-term solution to this problem, but as the use of ICT increases across the curriculum it is difficult to see how such measures can continue for long.

The impact of multimedia on the role of the teacher

As can be seen above, the introduction of new media has an impact on teachers' styles of teaching. Again this component of the research is at a preliminary stage, but we can see some emergent trends in teaching and learning with multimedia. The most apparent trend is in the integration of multimedia and ICTs into the 'learning mix'. We mentioned above that students found the use of multimedia motivated them to learn - PEDACTICE teachers are engaging with researchers to develop new models of teaching and learning that capitalise on this effect. Portuguese PEDACTICE teachers are working with researchers to develop strategies whereby goals and timetables for individual investigations can be set for students, all of which can be examined at any point by the teacher.

Again there are issues here about the role of the teacher and the manner in which he or she teaches. We see this as a move from the teacher as teacher to the teacher as guide and facilitator. Danish PEDACTICE partners have suggested that the role of the teacher using multimedia should be one of guide, this relates to the Portuguese description of teaching and learning above. This is not to say that teaching is becoming deskilled - indeed quite the opposite is the case – rather

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Definitions

➤ **ICT**: Information and Communication Technology. It includes the Internet; CD-ROM; video; computer packages such as word processors; and television.
➤ **Multimedia**: Refers to materials on both CD-ROM and available on the Internet. The term is also applied to *multiple* media such as a series of books and audio cassettes tied to a television or video programme.

that teaching is necessarily becoming re-skilled. These new skills are a key component of PEDACTICE, articulated in the aim to share best practice across Europe.

Teachers' assessment of educational software

What teachers need to know above all is what the CD-ROM or web site will do. This is at the heart of the project - the evaluation of multimedia products in context. Teachers are experts on what they need from multimedia products in that they 'deliver' the curriculum year in, year out. It is important for teachers to become developers of software, or at least to interact with developers in order to obtain software they can use.

One of our main findings from teacher assessment of software has been the perception that there is a disjuncture between what the software says it does and what it does in context. Obviously we cannot expect developers to build software that can be used in only one context, but we *should* expect them to build software that does what it claims. A number of teachers made this point, including some who stated that themselves or their colleagues had been put off using multimedia because the descriptions never approximated to the reality of the product in use. This is a key obstacle to the uptake of multimedia within education - a number of teachers felt that they could not trust software manufacturers claims. It is not our intention to criticise software manufacturers or to suggest that they are in any way dissembling when selling their products. Rather, the point is to suggest that an effective marketing strategy might turn on the use of intermediaries (who already exist) being shown products and suggesting to colleagues how they would fit into teaching and learning in context. Such a strategy would enable teachers to have the products that suit their needs and capitalise on the experience of intermediaries within the school as experts and possible partners for developers.

The importance of local experts

In the PEDACTICE research teachers have referred to colleagues as leading the uptake of multimedia in the school - these teachers are often located within the computing departments, but are also located in, for example, business education, music, science or modern languages. In principle, any teacher can be an 'ICT guru' within a school - the important point is that, as one teacher interviewed noted:

'We go to see (name), and he tells us if the package will work on our system. We get information on products that tells us, well you can use such and such a package on this machine because it satisfies the minimum requirements but they don't tell you that it won't work in the ways you want to use it because you only have the minimum requirements!

I go and see (name) and he tells me, well, with the machine you've got it will not work, no matter what the manufacturer says about minimum requirements. I can trust (name) because he knows what computers we've got'.

An alternative model is staff with knowledge of ICT outwith the school, operating in a peripatetic role. One PEDACTICE partner authority employs staff tutors in ICT to liaise with schools, ascertaining their needs and advising which packages would suit them through their knowledge of the school, its ICT capabilities, and its teachers. This model enables the teachers to introduce multimedia as a part of their curriculum development, but without the need to know about all potential packages. The development of ICT expertise in this manner is efficient in terms of time and resources, and appears to work well in the partner schools observed. It underlines the importance of knowing about both products and contexts of their use - a key feature of the PEDACTICE project.

European database

We hope that the European Multimedia Resource Library database being developed by PEDACTICE will be used as a resource by teachers, their colleagues in resource teams and by multimedia developers. It is expected that teachers will record their experience with multimedia packages in the database and that others will be able to retrieve this information. Again the point is to give some idea of multimedia in context, describing what can be done with a package and how teachers have used it. The database will be open to registered users and will provide an international forum for the communication of experience and best practice.

Conclusion

As the role of multimedia increases and policy drives ICT use to the heart of education, it is increasingly important to have an idea of the potentialities afforded by multimedia for teaching and learning. The PEDACTICE project builds on teacher competence and experience to consider the implications of multimedia in education, at policy, resource, system development and use levels. PEDACTICE is a forum for teachers, policymakers, developers and managers. With increased ICT and multimedia literacy among students it is important that teachers gain an understanding of what multimedia can do in the classroom context. PEDACTICE is an ongoing project and it is expected that the demands of policy will impact increasingly on ICT use in the classroom. However, it is important to know the current status of multimedia use and to have some idea of one's origins before formulating a destination. We would argue that ICT policy for education has to take more account of the

contexts of use and of the delivery of outcomes in these contexts.

Issues for policy

➤ We must understand teachers' use of multimedia and relate this to the policy contexts in schools and LEAs, taking each individually and examining the relations between them. *Only through a full exploration of each and the manner in which they interrelate can we understand what it is to use multimedia in a contemporary school environment.*

➤ It is not enough to provide technology and content infrastructure; there has to be a social dimension where teachers can talk face-to-face and explore their experiences of multimedia use. To continue to expect infrastructure-led projects to draw in teachers is to risk replicating the problems of earlier initiatives involving computers in schools.

➤ Policy initiatives encourage the use of ICT in schools, but ICTs have to find a use within the context of teaching and learning. Policy alone cannot develop multimedia use in schools. Teachers have to find a use for it and find it both efficient and effective. Success comes from experience not legislation.

➤ There is not enough information about some products. Producers and intermediaries send out catalogues that show products, but teachers need the opportunity to work with them to explore their utility for actual teaching and learning practice. This means that time has to be set aside for teachers to engage with products and explore their integration in an environment that has as little risk as possible in terms of professional and classroom management concerns.

➤ There is a need to appreciate and reward teachers' ICT expertise. Many teachers we spoke to used colleagues as 'gurus' or local support - notably those in the computing departments of their schools. This obviously has opportunity costs in terms of the time taken to advise and the nature of the advice given.

➤ Local experts should have the time to develop and reinforce their expertise as well as the opportunity within the school context to disseminate their findings and experience. These local experts know the schools in which they work and the needs of the teachers as well as the range of products and their requirements - this is vital if ICTs are to be used in schools effectively.

➤ Multimedia and ICTs are not *the* answer to problems of resourcing, motivation, and standards in education. A computer is not a panacea. The introduction of ICT into schools raises exactly the same considerations of resourcing that have faced schools for many years. Technology is not a proxy for time and money - it needs both to work effectively. Policymakers expecting a quick fix from technology will be disappointed.

Further reading

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Williams, D., Wilson, K., Richardson, A., Tuson, J. and Coles, L. (1999) 'Teachers' ICT Skills and Knowledge Needs', *Interchange No. 58*, Edinburgh: Scottish Office.

Further information

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About this study

PEDACTICE is a two-year, six-nation EU Educational Multimedia Task Force funded project researching the uses of multimedia in compulsory schooling. The Edinburgh component involves four in-depth case studies undertaken in Scottish schools.

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