

Multimedia resources and their effective use in distance education: problems and recommendations

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The Computerjournaal Project

Since 1989, the National Institute for Curriculum Development (SLO) in The Netherlands has worked on a project called Computerjournaal with the Netherlands School Television Network (NOT), the Dutch Telephone Utility (PTT), and the University of Twente (UT). The role of the SLO, NOT, and PTT has been to develop, produce and disseminate multimedia learning materials to lower-secondary schools throughout the Netherlands in a distance-delivery framework. The role of the University of Twente has been to evaluate various aspects of the design and delivery of the learning materials and teachers' reactions to the materials and use of them in their instructional settings.

During the 1989-1990 school year, the Computerjournaal package consisted of eight educational television programs, eight sets of accompanying print materials for both students and teachers, an educational software package, instructions for the use of other computer programs already in the schools and suggestions for the use of existing telecommunications services for on-line information-seeking and communication relevant to the goals of the overall learning materials (Lepeltak, Zeelenberg and Collis, 1990).

During this first year of collaboration, the overall goal of Computerjournaal was to stimulate language and humanities teachers to integrate information technologies into their lessons while at the same time emphasising a new approach to the traditional curriculum by focusing on the applications of information technology to language-related situations in society.

During the 1990-1991 school year, the same partners worked together on a new edition of Computerjournaal, containing new materials for geography classes and a stronger emphasis on the use of the telecommunications aspect of the learning materials. A new service, SLO-lijn (named after the initials of the Dutch National Curriculum Institute) was coupled with Computerjournaal activities so that participating teachers could freely and easily access support materials and make contact with each other relative to the use of the multimedia materials. Also, files could be downloaded conveniently to the teachers, thereby increasing the range of support materials available for lesson integration.

During the 1991-1992 school year the project has again run successfully, this time with an orientation toward information science ('informatiekunde') courses. There are six new episodes of multimedia learning materials and an increased focus on the use of telecommunications not only as a channel for distribution of lesson materials and ideas, but also as a focus of study in itself in the lessons.

In 1993 a new multimedia series will be presented by the same team, this time with the intention of directly providing a range of lesson support materials for teachers working with a new, compulsory curriculum course about informatics.

Throughout these sequences of Computerjournaal, the University of Twente has been involved in a number of parallel investigations relating to the reception and use of the Computerjournaal multimedia learning materials by classroom teachers (Collis, Aarntzen and Tholen, 1990; Verwijs, 1992; Collis, in press). The following comments summarise some of the main areas of investigation in those research studies.

Experiences with multimedia materials in the Computerjournaal Project

When teachers consider the use of multimedia (or 'multiple-media', Collis, 1992, or 'conceptually-connected multimedia', Moonen and Collis, 1991, 1992) educational resources, key problems seem to relate to the implementation and integration of the materials into the classroom curriculum and routine. Not only must technical challenges be considered but also the educational challenges involved in integrating different learning materials together and managing student activity while they are working in a multi-component setting.

One of the main implications of our research with the Computerjournaal project is that we consider it is extremely important that teachers should be given effective strategies for integrating a rich set of educational resources into their teaching practice, especially when they are not familiar with some of the resources. This is especially so with learning materials involving telecommunications connections.

Another major problem relates to the intention of the producers of multimedia materials that the materials be used in careful synchronisation with each other. In practice, this does not occur. Teachers tended to videotape the television programs in Computerjournaal and put them on a shelf for later use. They also downloaded lesson materials, tests and educational software from the electronic mail system but did not integrate these with the recorded television broadcasts sitting on their shelves. When the print materials came in the mail, the coordination of different media came under even more pressure, in that the reading of print materials and distributing them to students was so much simpler than the task of previewing, setting up, and showing videotapes, or working with the telecommunications possibilities of the project, that teachers used the print materials often with little integration of other media. A further problem became apparent: teachers having access to a computer room used the computer software available through the project but not in the context of the overall learning goals of the project. After some time, teachers tended to pick up the various parts of the different learning materials that they thought could be useful. The pressure of their daily work and the consequent lack of time made planning for integration of different materials difficult.

Thus one of our major activities during the 1991-1992 year has been improved support for teachers dealing with the multimedia materials, to help them to see strategies for use of the components as integrated parts of a learning setting. A year-long project has resulted in improved print materials for teachers as well as informative videotapes to help them anticipate the management of multimedia learning materials in various sorts of classroom settings (Verwijs, 1992). Another project is underway to investigate the design of electronic materials to provide this kind of overview (Siteur, 1992, in progress).

With respect to the individual media used in Computerjournaal, our three years of experience have shown that the number of schools using the telecommunications possibilities is still small but on the increase (see also Collis and De Vries, 1991, and Veen and Vogelsang, 1992). We can see that schools that use modems are very positive about the fact that they can access educational programs (freeware or shareware) and extra lesson material at low cost.

Although the television lessons played a central part in the project, we found out that the printed material was used most often. It is important to note that within the printed lesson material there should be explicit references to the other media involved (taped television programs and the email material). When working with other media the printed material should always be used as a guideline. The television programs cannot be used at the same time as the other media.

In classroom practice we have seen that it is not convenient to stop the videotape and start another activity using a different medium. The use of telecommunication and computers ('telecomputing' or 'telematics') seems to be a good addition to the use of other media. An important argument for using email and a bulletin board service is the ease with which one can distribute current materials and texts as well as communicate with teachers and students. All of these observations, and others, have been built into the support materials developed by Verwijs (1992) and will be incorporated into the new series for the 1992-1993 school year.

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