

13 Telematics in Education: The Dutch Case

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Summary

In the Netherlands and elsewhere, the rapid technological developments in society and the rapidly escalating interconnectiveness within Europe and with the rest of the world are reflected in the sorts of educational developments that are taking place. Even in a small country as The Netherlands, the need for and use of telecommunications in education is becoming a premise.

An ongoing dilemma for educational policy makers in general is that the tasks of stimulating innovations and preparing for future trends in society are often difficult to harmonize with tasks related to the ongoing needs and demands present in the educational system (Collis, Veen, & De Vries, 1993). This dilemma becomes particularly challenging with respect to telecommunications. The Dutch government has given low priority to telecommunications in its overall policy for information technology in education. In this article we will examine the current situation in The Netherlands for the use of telecommunications in education. Most of the findings are based on a recent year-long study (Collis, Veen, & De Vries, 1994a&b) by the same authors.

Recent and Current Experiences

A general policy for telecommunications in education is lacking in the Netherlands. Despite this, various kinds of policy decisions are already being made on different levels with respect to the investment in and management of telecommunications in education. There is a wide variety of activities going on. Here, rather than focusing closely on particular experiences, we shall extract general trends and

observatise from them. These trends are based on an analysis of many reports and publications available about telecommunications-related activities in the school-related educational sector in the Netherlands. Collis & De Vries, for example, did an English-language summary in 1991, as did Veen & Vogelzang in 1993. Also, the Workdocument of the CISO Project Final Report includes a reference to a number of relevant Dutch reports (Collis, Veen, & De Vries 1994b).

Project Syntheses

Veen & Vogelzang (1993) reviewed that 13 educational telecommunicational projects in the Netherlands generally had the goal of exploring the prospects for telecommunications in education. Some of the projects were independently set up, some with Ministry or PTT Telecom support, others via initiatives from individual educational establishments or business and industry. However no national coordination has existed to systematically chart or build upon the experiences. Veen & Vogelzang's general conclusions include:

- The projects tend to come to a close the moment the first phase, the initial phase of the process of innovation, has just been completed, or is not even nearing completion.
- The project results are slanted by the fact that, during the project, external support and extra facilities are made available to the pilot schools and teachers involved. The stimulus that this instills decreases the transferable value of the conclusions of the projects to 'standard' educational institutions (p. 897-899).
- Promising aspects in using telecommunications in the projects appear to be: speed, topicality, information-processing, motivation, participation, a greater range of information, and organizational efficiency (p. 902).
- Common problems include: problems at the school-management level relating to policy, financial support, organizational and personnel support, and moral support; problems relating to the organizational, technical, and pedagogic skills of the teachers; and the need for human networking to underlie telecommunications contacts (p. 903-905).

The earlier Collis & De Vries (1991) study of the Netherlands projects shows similar results, but adds the following analysis on the project level:

- Among those involved, there is a strong enthusiasm for telecommunications, but little evidence of telecommunications use spreading beyond the project borders.
- Almost all projects are internationally oriented and the major motivation is the development of better social understanding and communications skills among students in different cultures.
- Almost all (European) projects are computer-mediated communication activities, rather than projects involving access of on-line databases.
- There is a strong emphasis on the need for good instructional preparation.

- The many different projects virtually have no exchange of information. A systematic synthesis of experiences of the projects is missing (among the projects or even within many of them).
- Most of the projects seem to be led by or at least strongly rely on the efforts and vision of one or two key persons. If these people or the funding stops, the telecommunications activity will also stop.
- Apparently the objective measurement of the educational effectiveness of activities is difficult to carry out. The most frequently cited 'results' are: 'It is fun doing it', there is a 'greater awareness', it is good for 'motivation'.

Need for Coordinated Support

Particularly because we have had ample experience in 'exploring' telecommunication in Dutch schools, it has become clear that short-term projects are not being translated into activities of lasting value to the educational system. It takes considerable time and usually involves start-up difficulties before telecommunications use becomes functional and efficient. Rediscovering this every time a school or teacher wishes to use on-line services leads to an inevitable waste of start-up time, and even discouragement or scepticism among potential users. On-going support and a facilitative context are necessary to overcome predictable common problems and extend the services and experiences available via telecommunications beyond the pioneer or project basis. Collis, Veen & De Vries (1994a/b) focus in their 'CISO Study' (CISO: Dutch acronym for an on-line 'Communication and Information System for Education') on recommendations for such a CISO Service for the overall Dutch educational system (up to higher education). These recommendations comprise a description of the characteristics and guidelines for an on-line service for education that will maximize the chance that telecommunications applications can reach their potential in the educational context. The Project was sponsored by PTT Telecom and governmental authorities, including the Ministry of Education, whose focus was to promote the application of new technologies to vocational education.

More Permanent Activities and Services

Some educational telecommunications activities and services in The Netherlands are more on-going. Some of these are associated with international network services of different sorts.

The Dutch-based 'European Schools Project' (ESP) which started its development in 1987, now coordinates and leads 'teletrips' (defined as 'structured ways of using computer-mediated communication within education', Sligte & Meijer, 1993) that involve schools throughout the world. The ESP Project, which has a strong international reputation, has received funding from the University of Amsterdam,

but generally operates on volunteer efforts and solutions. Although ESP is highly sensitive to the need for human networking and communication support among the teachers whose classes participate in ESP activities, the service is generally aimed at facilitating the student projects that are structured and carried out.

The on-line service 'ECCLES' is an example of services of a different nature. ECCLES is an on-line data base and bulletin-board system focused mainly on evaluations about educational software and the use of such software in The Netherlands. ECCLES is maintained by Anderson Consulting-ECC, a group with direct roots in the former national educational computing centre in The Netherlands. Subscribers to ECCLES in 1992 include educational institutions throughout The Netherlands, libraries, schools, Ministry agencies, and support services, who predominately use the service to seek out information and teacher-submitted experiences with software packages for different curriculum areas. A bulletin-board aspect has also been started, whereby more open exchange of comments can occur and files can be downloaded (Groen, Renema, & Van Roekel, 1992).

'SLO-Lijn' is a more broadly based bulletin-board system, run by the National Institute for Curriculum Development (whose abbreviation is 'SLO' in Dutch) with support of PTT Telecom. The main goal of SLO-Lijn is to 'stimulate the effective use of telecommunications in education in such a way, that it contributes to the development and innovation of education' (Lepeltak & De Vries, 1994, p.3.). SLO-Lijn offers BBS-facilities for communication and file transfer, and maintains various 'interest areas' which in themselves organize on-line discussions, additional file exchange, and other types of information flow.

SLO-Lijn is supported by many sorts of activities of which among others are: 'Primeurlijn', an interest area in SLO-Lijn dedicated to a weekly youth magazine under the name 'Primeur', and a section focused on a monthly magazine 'Computers op School' (COS) under the title 'COS in SLO-Lijn'.

'TELEWIJS' is a telecommunications service from PTT Telecom. TELEWIJS started in 1991 with information on new developments and events in the field of educational telecommunications in the Netherlands. In addition, this service offers 'hands-on' information for educators, with an overview of educational databases and services, initial lesson plans for telelearning, a database with key words in the field of telecommunications and education, and an overview of the available lesson materials provided by PTT Telecom, mostly developed in close collaboration with existing educational institutions.

Despite these initiatives, there remains a general sense of uncoordinated and unconnected projects and services. An indication of the need for coordinated action in the field of telecommunications is the recent establishment of the 'PETTO' group. This organization consisting of volunteers, tries to be a platform for telecommunications users, projects, and systems in education. Its goal is to improve the exchange of information, increase collaboration and stimulate the

development of telecommunications use in The Netherlands. The group gathers two or three times a year and publishes a newsletter to summarize these and other activities. Representatives (sometimes sysops) of ten different educational bulletin boards in The Netherlands participate, and attempt to do with human networking the sort of interconnections they are not yet able to do technically.

Current Opinions about Educational Telecommunications

No doubt there is considerable experience with telecommunications services directed at education in The Netherlands as well as with different types of specialized projects. But, as noted earlier, the existing services and projects are generally of short-term or uncertain funding; operate as somewhat peripheral activities with relatively few personnel within institutions predominately busy with other tasks; and are generally not internetworked, either with each other or to major networks, such as the academic network of the SURF Organization, connecting universities and institutions for higher education in The Netherlands, or more generally to the INTERNET system.

No Central Point

There is no central, focal point of expertise and service to which the 'supply' and 'demand' sides of a network can refer, or which has the mandate to take responsibility and leadership for integration, charting of experiences, efficiencies of scale, and more complex activities such as on-line inservice support. Most countries in Western Europe (and most states in the United States and most provinces in Canada and Australia) have this sort of leadership and support focus (Collis, Veen, & De Vries, 1994a).

Export Survey

As part of the CISO Project Collis, Veen, & De Vries (1994a,b) recently made an inventory of opinions in The Netherlands concerning the support of telecommunications use in education. This inventory included a survey, group discussions at a national study day, and various interviews. In addition to numerous informal discussions with persons already active with telecommunications projects or services, a questionnaire was distributed to participants at a National Study Day sponsored by PTT Telecom (25 June 1993), to which persons active with telecommunications in education in The Netherlands, or involved with policy relevant to the application of telecommunications, were invited. In general the participants showed themselves to be particularly interested in the use of on-line possibilities for professional activities and interactions among teachers and school administrators. The on-line distribution of examination questions, for example, was seen as a useful way to perform a time-sensitive and high-volume task. Access to on-line collections of instructional support materials and lesson ideas was also stressed as valuable for teachers.

Interviews with Policy Makers

Also, individual interviews were held with persons involved with policy in areas tangential to a Dutch CISO Service itself, but potentially interested in its range and possibilities. The persons included, among others, politicians, a media sociologist, technology policy specialists for various Ministries, a faculty member from the Dutch Open University, and persons representing various educational support institutions. To summarize the main points of the various discussions:

- Policy makers believe that an efficient on-line communication and information system for education could have strategic broadscale value, but costs and quality organization of services are critical concerns.
- A CISO-type Service must be handy, and eventually save time and money. It is important that students should become familiar with the use of communication technologies.
- Software to support on-line use must become more user friendly.
- Telecommunications can be used to stimulate renewal in the school and in instructional practice.
- The Ministry, the government, and schools have the opportunity to save money by making their information directly retrievable on-line from a CISO Service.
- A foundation or cooperating group should be established, with contacts in the schools, and that schools feel gives them some ownership in the Network. This group should coordinate and stimulate use of the CISO Service. Groups that support education should also be connected to the Network.
- The issue among these policy makers was not 'Would we use a CISO Service?' but 'How will we use it?' An integrated communication and information service, bringing together a number of existing networks and services, is preferable to starting one's own, separate system.

Political and Educational Context for Educational Telecommunications

An evaluation of current projects, services and opinions about educational telecommunications in The Netherlands is only one part of the picture. Also, more-general conditions in the country should be considered, as they shape the political and educational context in which all new technological developments in education are taking place.

Sectorization

The Dutch school system is sectorized in the sense that the different sectors of education are organizationally and culturally quite separate from each other. For example, there is a the division of the K-12 sector along religious lines with each having a great deal of autonomy. Within vocational education there are many different types of schools organized in a number of subsectors. This kind of highly sectorized situation may make it hard for the type of integrated use and enterprise to develop that characterizes some of the broadly based CISO-type services such as

those to be found in Iceland, Ireland, and Luxembourg. These are small countries; their CISO Services can only work efficiently when not splintered into small, disconnected pieces. Maintaining a number of different CISO Services for each of the small Dutch subsectors may lose the benefits of efficiency, of scale, of interconnectedness, and of opportunities for strategic innovation that characterize a number of the successful national services (Collis, Veen, & De Vries, 1994a).

The most successful systems also have, next to their well-functioning subnetworks, some central coordinating service that both stimulates more localized CISO-type services, but at the same time provides powerful and strategic leadership and coordination. This is the case in Denmark, Iceland, Luxembourg, and Spain, and in particular in the Nordic School Project (Ranebo, 1993). The five Nordic countries have developed a plan for further development of telecommunications services. The main goal of the plan is that the Network will serve all five countries, linking their existing national educational services.

Communication

A second factor to consider is one that may be a stimulus to the development of telecommunications use in Dutch education. Within a relatively short period in time there have been a number of school fusions, sometimes involving buildings at a considerable distance from one another. Difficulties in communicating among distant colleagues are the result in many of the newly consolidated schools. The appreciation that teachers have shown for electronic information and communication in countries such as Ireland and Norway could be also the experience in The Netherlands, if on-line access were not a burden to teachers and schools.

Curriculum Reform

In September 1993 a significant reorganization took place in Dutch lower secondary schools, in which a new, common curriculum has been introduced. The effect is difficult to predict but coping with new curriculum, new texts, and new groupings of students may make teachers feel less likely to consider new on-line environments or conversely, it may make teachers particularly appreciate the chance for widespread contacts, sources of lesson materials, discussion groups, fast ways of getting information, and flexible and more frequent ways of getting professional support.

An interesting side effect of the curriculum reform is that informatics has become a real subject area for which the educational publishers and others have developed new instructional materials. Telecommunications, although not explicitly described in the goals for informatics teaching, has been recognized as an important issue. In 'SHIFT' for example, one of the newly developed informatics series, telecommunications has been integrated in the sense that it is used as an important source for particular learning experiences, updated and additional lesson material and a means for communication among users and with the authors.

The Self-Responsible School

A policy decision in the Netherlands to give schools considerably more autonomy and responsibility for their own educational and professional choices, and to take the consequences of their decisions, is placing a burden on schools, and on school leaders in particular. This might be a critical factor in the development of a CISO-type Service, which means that particular attention should be given to the usefulness of the system for the ongoing professionalization of the teacher and school leader.

Decentralized Leadership

The Netherlands is seeing a shift in policy away from large-scale, central stimulation of information technology in education. After ten years of extensive and far-reaching projects involving hardware and software provision and teacher training, the Ministry has now decentralized initiatives about information technology to the schools. If the autonomous schools can work together to an extent sufficient to create a critical mass of activity to support a significant CISO-Service remains to be seen, but it is doubtful. A good CISO Service organization is not a grass-roots operation. Thus the decentralization policy in The Netherlands can be a significant barrier for an effective and vibrant CISO Service: from where will its authority, financial support, and leadership come in a decentralized, autonomous-school environment? Ironically, it is the autonomous school and its leaders that most need efficient access to relevant information and expertise.

The Ministry of Education: Not interested!

Up until recently the Dutch Ministry of Education has generally shown minor interest in the use of telecommunications in education. In the final report on their 'New Media Policy' (1987-1991), the Ministry concludes: 'Telecommunications seems to offer no perspective for future use in education' (Ministerie van Onderwijs en Wetenschappen, 1992a, p. 2). Following this report, a new report was published (Ministerie van Onderwijs en Wetenschappen, 1992b) on the major goals of the governmental policy concerning the use of information technology and the new media in education for the years to come. Again, telecommunications plays only a minor role. The suggested new 'New Media Policy' has not been effected yet. However there are changes. The decision makers at the Ministerial level are equally challenged by the new situation of decentralization of leadership and the autonomy of the school. Only very recently the Ministry has started negotiating with the Dutch national Telecom company about an educational network service. This initiative was based on the final report of the CISO Project and announced by the Minister of Education, saying: 'The Ministry of Education, PTT Telecom and the SURF organization (Academic network) will look for the best strategy to stimulate the development of an educational network' (Ministerie van Onderwijs en Wetenschappen, 1994, p. 10).

Costs

The Netherlands, as in most other countries, is facing more and more financial pressures in education and in society. Costs are of crucial importance for the success and strategy of a CISO Service. This presents an opportunity for a CISO Service, if it focuses on ways that could lead to cost savings, such as for information dissemination or to facilitate teachers' access to types of inservice and support through their own computers rather than through traditional and expensive face-to-face inservice sessions. However, without efficient support, the high start-up costs in terms of time, effort, equipment outlay, and personnel time that have characterized the majority of telecommunications projects in The Netherlands will make it unlikely that an overall cost-savings position will occur, at least in the short-term.

The European Context and Beyond

Finally, the Dutch educational system does not exist in a vacuum. Major trends and initiatives are going on throughout Dutch society and the rest of the world relative to teleworking and telelearning. More and more higher vocational institutions and traditional universities are developing strategies for flexible access to their programs. Flexibility in time and in location can only occur through the use of well-managed and stable telecommunications services, and these are increasingly being developed. Campus-wide on-line information systems and world-wide interconnections through access to the Internet system are well established in Dutch universities and in many higher vocational education institutions through the centralized and efficient support offered by the SURF Organization, a CISO-type academic network service for higher education well established in The Netherlands which was started with and still receives a substantial subsidy.

More generally, the newly-announced Fourth Framework programme of the Commission of the European Community clearly places access to distant resources and learning at the heart of many of its educational initiatives. The new 'White Book' of the Commission for Economic Growth is also emphasizing the importance of a 'community information environment' for Europe, particularly with respect to vocational education and training, and particularly as mediated by telecommunications services.

Conclusions

There is much established in The Netherlands, but outside the Dutch educational system that relates to the sophisticated use of telecommunications in work and learning. But so far these 'outer-world' aspects of telecommunications have not had much reflection in the Dutch educational system. Unlike in many countries, where strong initiatives are being made to help teachers have guided and affordable access to the Internet system, for example, little or no such help exists in The Netherlands. The teacher who wishes this must, as a true pioneer, find a way to associate him or herself with a particular project or an university node.

This is time-consuming, inefficient and a generally poor situation (Collis, Veen, & De Vries, 1994).

There is good experience in The Netherlands with telecommunications in education and there is strong experience with telecommunications applications in higher education, in training, and in society more broadly. There is also clear experience that without a strong, on-going, efficiently run, centrally coordinated type of service, with time to develop its services and the support of its users during their predictable start-up problems, the benefits of telecommunications for the Dutch school sector may not be realized. The particular circumstances in The Netherlands at this point in time suggest both potential difficulties, and opportunities, for a professionally run, integrated, educationally oriented on-line service and its associated organizational structure.

References

- Collis, B., & De Vries P.(1991). *Telematica in het voortgezet onderwijs*. PRINT-VO (Ministerie van Onderwijs en Wetenschappen), Hoevelaken: Nederland.
- Collis, B., & De Vries, P. (1993). *The emerging trans-European network for education and training: Guidelines for decision makers*. Task Force Human Resources, Education, Training and Youth, Commission of the European Community, Brussels.
- Collis, B., & Levin, J. (1993). Research on telecommunications and learning: An international perspective. In D. Foster & D.V. Jolly (Eds.) *Proceedings of the Tel.Ed'93 Conference*, 51-56. Austin, TX: Southwest Educational Development Laboratory.
- Collis, B., Veen, W., & De Vries, P. (1993). Preparing for an interconnected future: Policy options for telecommunications in education. *Educational Technology* (33), 1, 17-24.
- Collis, B., Veen, W., & De Vries, P. (1994a). *Recommendations for an on-line service to support the Dutch educational community: Final report of the CISO Project*. The Hague: PTT Telecom Netherlands
- Collis, B. Veen, W. & De Vries, P. (1994b). *Het CISO-project: Naar een communicatie en informatie systeem voor het onderwijs: Aanbevelingen voor een CISO: Werkdocument (supporting documents)*. The Hague: PTT Telecom Netherlands.
- Commission of European Communities, (1993). *The white paper on growth, competitiveness, employment*. Cat.: CM 82-44-529-EN-C-EN-C, Brussels.
- Danish Ministry of Education (1993). *Proceedings of the conference on the use of databases and telecommunications in education*. Copenhagen, Denmark.
- Groen, G. M., Renema, C., & Van Roekel, P. (1992). *ITOI: ECCLES databank en bulletin board: Jaarverslag 1992*. Enschede: Arthur Anderson-ECC.
- Hunter, B. (1993). Internetworking: Coordinating technology for systematic reform. *Technology in Education*, (36), 5, 42-46.
- Lepeltak, J. & De Vries, P. (1994). *SLO-Lijn projectplan 1994*. Enschede/The Hague: SLO & PTT Telecom.

- Ministerie van Onderwijs en Wetenschappen (1992a). *Eindverslag Beleid Nieuwe Media in het Nederlands Onderwijs 1987-1991*. OPSTAP - reeks 37.
- Ministerie van Onderwijs en Wetenschappen (1992b). *ENTER: De toekomst, notitie over informatietechnologie in het onderwijs na 1992*. The Hague.
- Ministerie van Onderwijs en Wetenschappen (1994). Kennistechnologie heeft de toekomst. Introductory address at the PRESTO Conference by dr. ir. J.M.M. Ritzen, Minister of Education and Research. Almelo.
- Ranebo, S. (1993). *The Nordic school project: A way to address the key issues in electronic linking*. Presentation at the Council of Europe Seminar for Electronic Linking of Schools, Stockholm.
- Review Board on information technologies and telecommunication technologies applied to education and training (1993). *The Review Board report on information and telecommunications technologies applied to education and training*. Report under contract to DG XIII, Commission of the European Community, Brussels.
- Sligte, H., & Meijer, P. (1993). Evaluating teletrips within the European Schools Project. In G. Davies & B. Samways (Eds.), *Teleteaching*, 797-807. Amsterdam: North-Holland.
- Veen, W., & Vogelzang, F. (1993). The use of telematics in Dutch education. In G. Davies & B. Samways (Eds.), *Teleteaching*, 897-906. Amsterdam: North-Holland.