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The PIT-project: A teacher networking approach for broad-scale use of ICT

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Abstract

The PIT-project is an initiative of PRINT in the Netherlands. The main objective is to stimulate and increase effective integration of ICT in eight disciplines in lower secondary education. The PIT-project started in 1993 and has worked with more than 50% of all schools, over 2,000 teachers and over 30 curriculum specialists. The Project uses the strategy of teacher networking to bring teachers together to train them, to develop materials for their own situation and above all to share and learn from each other's experiences. Alongside the physical aspects of the networking, attempts are made to elaborate on telematic support for the teachers involved in the networks.

An extensive external evaluation has been carried out throughout the first two years (round one and two of the project with 196 schools). The most important conclusions of this evaluation are:

1. The implementation of computer use in the classroom increases significantly during the PIT-Project.
2. The teachers state that the networking is very supportive for their professional development.
3. A multiplier-effect seems to develop in the schools involved in the Project.

So the PIT-strategy appears to be a very effective alternative to more traditional in-service training.

The announcement of a third round in September 1995 in which the participating schools have to invest their own funds to join the project, resulted in a subscription of another 230 schools. Another 40 new networks have been formed consisting of 20 to 30 teachers. From November 1995 until November 1996 they will be participating within the new set-up and will be called 'PIT-teachers' at 'PIT-schools'. In the Netherlands this term has become accepted as a commendation.

Keywords

Secondary education, attitudes, evaluation/summative, national policies, networks, support services

1 INTRODUCTION

In a period of 8 years of national projects (1985-1992) which focused on introducing information technology in secondary education in the Netherlands, an infrastructure was set up, hardware and software became available in the schools and many good examples of how to use IT were implemented in schools. All of this was part of a national strategy (Hogenbirk and Diepeveen, 1993). Yet at the end of this period the incidental use of IT as a tool in the daily practice of education was limited to some teachers in some subjects in a minority of schools (Pelgrum, 1993). The Dutch government decided to assign the management of PRINT (the PRoject on the Implementation of New Technologies) to set up a project focusing on the use of information technology (IT) within lower secondary education between 1993 and 1996. Later, the scope was broadened to involve communication technology (ICT). The project addresses the new curriculum for all pupils from 12 to 15 years old, called 'Basic Education', introduced in 1993.

2 THE DESIGN OF THE PROJECT

PRINT launched the PIT Project (Veen, Hogenbirk and Jansen, 1994) by supporting a maximum of 200 schools with 'Projects on Information Technology' (so called PIT-schools). This can be translated into English as 'Schools with Spirit' or 'Schools with Projects in Information Technology'. PRINT invited three rounds of involvement (March 1993, March 1994 and September 1995) where every school for secondary education could subscribe to projects in, preferably, three out of eight school subjects: Dutch (mothertongue), German, French, English, mathematics, physics and chemistry, biology, and technical skills. In each discipline there was a choice of one from four or five themes, such as information retrieval, learning strategies, remedial teaching, reteaching, differentiation in time or content, strategies on how to study, assessment and experiments in laboratory sessions, all of them in combination with ICT.

The PIT-schools have an educational advantage when they participate (free counselling and help). In rounds 1 and 2 they received 24,000 guilders (about 12,000 dollars) each year, to spend on hard- and software, but also to pay for extra time for the teachers involved. For round 3, the money supplied by the government was limited to the organisation of the project and the support of the networks. Schools participating in this round have to fund all other expenses themselves.

3 THE ORGANISATION

For the first and second rounds more than 500 schools responded. 125 schools were selected for the first round starting in 1993 and 71 for the second round in 1994. For the third round another 230 schools subscribed and they were all able to participate.

In total, for the three rounds, 77 social and physical networks (or Theme Groups) were formed, each consisting of one or two subject teachers from approximately 15 schools. Each network tackles one of the themes defined for their discipline. The networks meet face-to-face six times in a school year. The participating teachers are instructed and coached by Theme Group Leaders from the three national Educational

Advisory Centres, exchange information and professional insights, work on their personal and professional development, and develop, comment on and evaluate new materials. Each PIT-school is encouraged to participate in at least three networks in three different subjects in order to get a critical mass of users of computers in every school. Each participating school appoints a so-called 'PIT-co-ordinator' for managing the project at the school, giving support, and assisting in the making and implementation of school policy on IT.

Finally the administration of the school is committed, setting up a contract in which the duties of both parties are stated. The PIT-co-ordinators and a member of the administration of each PIT-school attend special sessions about implementation support and policy-making.

4   ON-GOING EVALUATION

In order to monitor the project, but also to evaluate the process going on in the schools and among the teachers, an on-going evaluation was defined. With the wide range of activities going on in the PIT-project, three different sources of information were used: the PIT-co-ordinators, the PIT-teachers and the Theme Group Leaders. The evaluation for the first two rounds was carried out by the Faculty of Educational Science and Technology, Department of Instrumentation Technology (ISM), of the University of Twente in the Netherlands (Collis and Moonen, 1995). In this paper only the major conclusions of this evaluation study are given.

Level of the CBAM Model	Type of concern	Action toward the innovation
1. Minimal Awareness Level	1. "Should I know something about this?"	1. Casual interest in getting information about the innovation
2. Some Knowledge	2. "How does this work?" "Can I figure it out and handle it?	2. Interest in browsing and exploring
3. Some Use of One or Two Types	3. "Is there a manageable way I can use these in practice?"	3. Tries some things in practice
4. Regular Use	4. "How can I make this part of my day-to-day practice?"	4. Makes some uses of IT routine in his/her instructional setting
5. Regular Use and Leadership Role	5. "How might I stimulate my colleagues to see the educational potential of this?"	5. Makes regular use of IT in instructional practice and also works in various ways to stimulate his/her colleagues to also make use of IT

Table 1 Adapted by Collis and De Vries (1993) from the CBAM Model (1977)

The framework of the CBAM Model was chosen (Hall, Loucke and Rutherford, 1977)

to study the degree to which:

- the PIT teachers move to higher levels of involvement in using IT in instruction during their participation in the PIT-project;
- a multiplier effect occurs in the PIT-schools, so that other teachers not directly participating in the PIT-project also move to higher levels of the CBAM Model.

Based on other research about teachers' reactions to computer-related innovations in schools (Collis and De Vries, 1993), the CBAM Model was simplified as shown in Table 1 above.

The increased use of IT in instructional practise by the PIT-teachers was a major positive outcome of the evaluation, which was tracked by a variety of indicators:

- a significant increase was self-reported in CBAM level by the teachers, from 2.57 at the start of the project (October 1993) to 3.73 at the conclusion (May, 1995). (See Figure 1 below.)
- the observation by the PIT-co-ordinators that all or nearly all of the PIT-teachers in their schools were 'trying new things' with IT in their instructional practice.
- a synthesis of the case studies, showing that in eight of the nine PIT schools studied in depth, a major conclusion was that more use of IT was occurring, and occurring because of PIT.
- an analysis of Theme Group Leaders' reports on the teacher discussions and the teachers' increased sharing of 'success stories' during the course of the project.
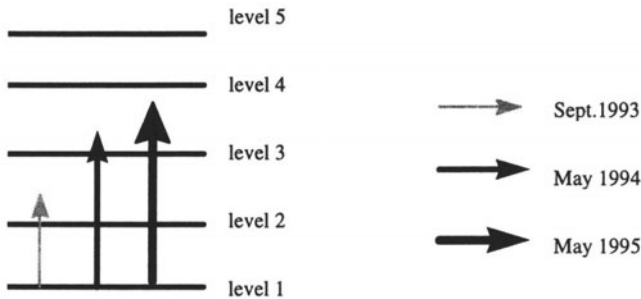

Figure 1 The increase of the CBAM-level of PIT-teachers in the first round

The PIT-co-ordinators were asked to indicate their levels of satisfaction with the PIT-teachers on the project. The results of this question are represented in Figure 2 below.

The majority of the teachers indicated that they were (mostly) satisfied with the project, and only a small percentage indicated 'mostly negative' results. It is clear that, in a setting in which so many teachers have rather different backgrounds, different starting points in experience in instruction with IT, and different expectations on the personal outcome of the project, that these results are strongly positive. In order to obtain qualitative feedback from the participants, the opportunity was provided to add positive as well as negative remarks. Some typical remarks added by teachers and co-ordinators were:

"Please continue in the other disciplines and in higher secondary education."

"Our self-made material was printed in your booklet!"

"Fund the development of new software."

"There should be more material for lower vocational education."
"You should bind the schools to facilitate the participating PIT-teachers."
"We have problems with obtaining money for a system-operator, for replacement and renewal of the hardware."
"We want more information about new multimedia and the Internet."
"Educational publishers should invest more money in making good software."
"Compared to other projects on stimulating the use of computers, PIT is a number one HIT."
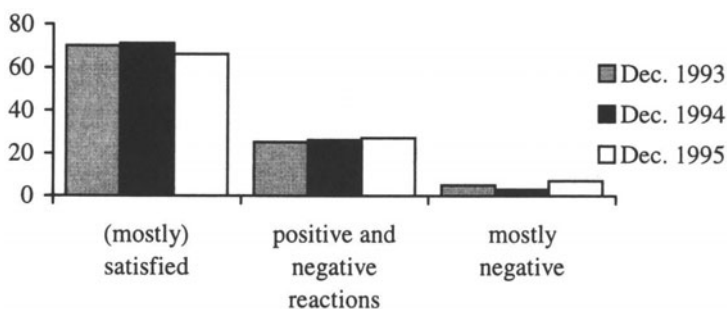

Figure 2 Satisfaction of PIT-teachers, as observed by the PIT-co-ordinators

There were two sets of indicators to evaluate the multiplier effect of the project in the participating schools. The PIT-teachers observed a significant change in the level of use of computers by their non-PIT colleagues: from CBAM level 1.96 at the beginning of the project to 2.74 by May 1995. Also the majority of the PIT-co-ordinators (70%) felt at least some increase in IT use by non-PIT teachers and another 18% felt it was increasing strongly.

5   TELEMATIC SUPPORT IN ROUND THREE

As the project met its goal in supporting a maximum of 200 schools, the Government did not want to continue this expensive means of support. So, a third round of PIT was set up to which schools could subscribe, but without receiving additional money. In order to make it as efficient and effective as possible only 8 themes were defined for using ICT in instruction, in the 8 subjects mentioned above. All the experiences, physically produced in booklets, about new or updated software, gathered in the first two rounds, were trialled in six face-to-face meetings for each network. In order to make it even more attractive to participate in this new round, the aim was to form regional networks in order to reduce travelling time for the teachers. Furthermore, a system of telematic support was also designed. This support consisted of three major elements:

- a training course on using the Internet (one afternoon session for the Theme Group).
- stimulating the use of e-mail by the teachers in the Theme Group to communicate with each other, to exchange remarks, questions and provisional

products.

- maintaining a site within the PRINT-site for every subject to give and raise information that could be relevant for the teachers.

These latest features were also available for other teachers and people who were interested. All of these sites were moderated by the Theme Group Leaders themselves, or by experts who are familiar with the networks.

The idea emerging from this telematic support is that people who know each other professionally, who have met and still meet each other on a regular basis, are supported more effectively by the Internet than by other means of communication.

As the third round of the project started in November 1995, there are no results yet available which indicate the outcomes of the project or the validation of this hypothesis. In May 1996 a questionnaire for this group of participants will be used to gather evidence.

6   CONCLUSIVE REMARKS

Using human networks of groups of teachers, exploring a certain theme within their own professional subject appears to be a powerful strategy for changing the attitude towards new types of educational behaviour.

Important elements in the setting up of such a network strategy are to:

- gather teachers who do not differ a great deal across a scale of involvement.
- put emphasis on the teacher's own professional development and on the exchange of experiences.
- facilitate teachers directly or even better by the commitment of the school administration.
- realise a balanced mix of easy to use materials and more time consuming ways of improving teaching methods, of training and exchanging experiences, of face-to-face meetings and other means of communication.
- give members of the network the opportunity to call on help and support during the project but also afterwards.

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8   BIOGRAPHY

Pieter Hogenbirk has been a teacher in secondary education. He was involved in the development of innovative educational materials at the universities of Utrecht and Amsterdam. In 1987 he became project manager within the NIVO-project, with a follow-up in the PRINT-project from 1989. He has been in charge of managing projects on development of the curriculum, courseware and in-service teacher training, and the implementation of materials and training for informatics and Computer Aided Learning. From 1993 he has been head of the PRINT-management for secondary education. PRINT is carrying out more than 100 projects for development and implementation of the use of ICT in secondary education.