BY BETTY COLLIS

Triple Innovation in The Netherlands

Editor's Note: Betty Collis, known to The Computing Teacher *readers, presents an interesting glimpse of a large-scale plan for change. A more complete report on the triple innovation will be published in the* Journal of Computing in Teacher Education.

Innovation is difficult for schools; this has been widely established around the world. We know that implementing school renewal and curriculum change is difficult; we know that integrating information technology use into the curriculum is difficult; we know that implementing new approaches to teacher support and inservice is difficult. What happens when an entire country decides to do all these things at one time? This is happening with success now in The Netherlands. In this article, we give a brief review of the triple innovation in The Netherlands and then look more closely at the some of the innovative approaches to teacher support and inservice that are occurring.

Innovation 1: School and Curriculum Reform

After many years of debate, The Netherlands has recently decided to radically change its curriculum for the first three years of secondary school. Previously students could be taking many different types of programs and levels of instruction during this time. Starting in September 1993, all students follow a common curriculum in most subject areas during the first three years of secondary school. Eight of the subject areas are: Mathematics, Physics & Chemistry (treated as one subject), Biology, Dutch, French, German, English, and a new subject called "Techniek." Core objectives have been established for each area, new textbooks and instructional materials developed, a stress on methods of teaching such as interdisciplinary projects and more group work for students is in place, and teachers are confronted with a call for enormous changes in their established practice. This massive overhaul began in 1993. It is called, in Dutch, the "Basisvorming," which means something like a common period of basic formation for all students regardless of ability level or future educational plans. Teachers were involved in the planning and have accepted the challenge with good spirit and with commitment.

The Netherlands is attempting to simultaneously restructure schools, integrate technology, and redefine teacher support.

Innovation 2: Integration of Information Technology within the New Curriculum

A second, parallel innovation is the decision by the Ministry of Education to establish a broad initiative to embed the use of information technology solidly within the new curriculum. Although a relatively short introductory course in topics related to information technology (20 hours) is also part of the curriculum for lower secondary school, the major thrust of the national project "Information Technology in the Basisvorming" is to establish a core set of objectives for students in skills, concepts, and applications. The objectives are to be met through the integration of IT into the new curricula.

Extensive curriculum-preparation work has been carried out. The National Curriculum Institute and other groups developed these core IT objectives, made them concrete through integrated applications in the eight new subject-area curricula of the eight subjects mentioned earlier, and also developed teaching and learning materials in which IT use is meaningful, natural, and embedded.

Innovation 3: New Strategies for Teacher Support and Inservice

The third part of the Dutch Triple Innovation has been the decision of the Ministry of Education to support a nation-wide innovative plan for new types of teacher support. Teacher networking is a key element. The initiative has two main components: (1) broad-scale activities aimed at all schools with ten different categories of activities including regional demonstrations of new

software, innovative inservice sessions based on teachers' requests, video and television broadcasts for teachers and students, many different publications, as well as a new area on a national educational BBS (bulletin board system), where teachers have free access to a wide range of information; and (2) "PIT Schools," or "Schools with Spirit"—aimed at an initial sample (in the 1993-1994 school year) of 125 schools where more intensive and in-depth strategies are taking place for teacher support and stimulation. The University of Twente is involved in this component through an ongoing evaluation project.

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The PIT School Project

The PIT School Project involves setting up teacher networks based on 24 different themes—three for each of eight curriculum areas chosen from among the 15 involved in the overall curriculum change. These are Mathematics, Physics and Chemistry, Biology, Techniek, Dutch, English, French, and German. (Notice all Dutch secondary school students are required to study four languages. And they can speak and write in them, too!) Some of the themes have rather broad focuses—"Study Skills for the New Curriculum in English" or "Learning Problems and the New Curriculum in the Dutch Language"—are broad. Others are more specific—"Demonstrations and Simulations in the New Curriculum in Physics and Chemistry." Each theme was carefully described by a team of curriculum specialists, who worked with teachers in the development of the themes.

A plan for the activities in each theme for the school year 1993-1994 was established before the summer of 1993 and has been redone in June, 1994 for the 94-95 school year, with 11 new themes added. General coordinators for each of the eight subject areas and theme leaders for each of the theme groups work together. All are curriculum and teacher-education specialists who work with the theme groups, each of which consists of about 25-30 teachers from a wide variety of schools, who form a network for mutual support and the exchange of experiences and lesson ideas. They also interact through a number of PIT-Project strategies. The Project's goal is not to stimulate the production of new software products, but develop teacher- and student-support materials, and generally to support and stimulate teachers as they integrate IT into the new curriculum.

In our evaluation of the PIT School Project we are using the framework of the CBAM Model (Hall, Loucke, & Rutherford, 1977; Norris, 1993), and looking at the degree to which:

- PIT teachers move to higher levels of involvement in the innovation process during their participation in the Project.
- Other teachers in PIT schools, but not directly participating in the PIT Project, move to at least the "routine use" level of our adaptation of the CBAM Model.
- Interrelationships among variables such as curriculum area, types and characteristics of the software, different approaches to theme group activities, use of online networking, and different school environments are related to teacher adoption of IT use in the new curriculum and to teacher development.

We are trying to minimize the data-collection load on the schools and teachers, and also, within our manpower available for the ongoing evaluation, serve as formative evaluators working with the management team in support of their own needs in managing the complex project.

What Are We Learning?

One of our initial tasks was to form a baseline impression about the PIT schools and about the teachers' initial CBAM levels. We also had to become familiar with all the different initiatives and materials being produced by or stimulated by the Project. Through these, plus various surveys, observations, and interviews, we have interim findings such as the following:

Possible Benefits. The PIT teachers were asked to

predict the benefits of their participation in the PIT Project. Of a list of options, the following four were chosen by the teachers to be of the most benefit to them–listed in the order of expectation of positive impact:

- Enrichment of the learning material for the new curricula.
- Better remedial support for students failing to keep up with the new common curriculum.
- Better stimulation of students' metacognitive skills.
- Better provision of a variety of learning activities to heterogeneous classes of students within the common curriculum.

Possible Unmet Concerns. In contrast, the following options (arranged in order of least likely) were not seen by the teachers as likely to result from their inservice and support experiences in the PIT Project

- Getting help in how to use IT during the presentation and demonstration of lessons.
- Learning to better stimulate group and project work.
- Helping students to more effectively produce reports and graphics on the computer
- Helping students to get access to new sources of information outside their textbooks and workbooks.
- Learning more about how to put into practice the new curriculum methods.
- Becoming more able to explain concepts and ideas to the students.

These opinions will need careful review during the Project. A number of them involve instructional approaches felt to be central to the new curriculum and to the new approach for integrating IT into the curriculum. Teachers may not have fully accepted the likelihood of more group and project work resulting from the innovation, or envision students making ongoing use of IT for their own work support and information needs. Teachers may not see themselves as using IT as an integrated part of the new methodology for their subject areas. Alternatively, they may not be optimistic about getting adequate support from inservice activities to meet the challenges posed by the project. It will be interesting to see how their opinions on these issues change during the PIT project.

Teacher Networking

An important goal of the PIT Project strategy is to stimulate teacher networking as a means of ongoing professional development. The teachers were clearly interested in getting information about new software, but were divided in terms of how useful they felt networking would be in a more general sense–that is, exchanging experiences of classroom practice, participating in reflective discussions, or making informal individual contacts with subject-area specialists. On one point teachers were largely negative—they did not see much potential value in the use of an on-line BBS for support of informal networking.

These opinions, expressed at the beginning of the PIT Project, suggest to us that these teachers are highly motivated to get information about IT materials for the direct use and benefit of their students, but have less awareness of the potential benefit of focusing on themselves, as reflective practitioners and members of a professional community.

Teachers were asked to predict the effectiveness of the strategies being planned by the PIT Project: traditional inservice sessions, written reports from other PIT schools about their experiences, materials written by curriculum specialists, magazines and special publications, television and radio broadcasts, availability of the free BBS, and opportunities for informal exchanges with teachers within and outside of their own schools. Perhaps reflecting their previous IT-related inservice experiences–largely of a more traditional nature (Thijsen, Sijde, Collis & Plomp , 1990)–the PIT teachers expect the most from traditional sorts of inservice support. We will soon see if the third level of the triple-innovation, involving teacher networking as an

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important dimension of teacher professional development, will become more valued than traditional, structured face-to-face inservice sessions and materials written by specialists.

PIT School Coordinators' Reactions

A detailed questionnaire was completed by the teacher serving as PIT Coordinator in each PIT School at the end of the first four months of the Project. Approximately half said management and coordination tasks would be the most important aspects of their task, while the other half emphasized more socially oriented guidance, stimulation, and communication aspects. It will be interesting to see if these differences in approach to the task among the school coordinators become associated with differences in the multiplier effect in their schools–that is, the involvement of teachers beyond the initial core group of participants.

Approximately half of the coordinators felt they were not encountering any particular difficulties with their tasks; the other half indicated a long list of problems and concerns–software and hardware problems; problems in motivating teachers; problems in finding adequate time for their tasks; and problems relating to information management. Subsequent analyses are indeed showing that the management-oriented school coordinators seem to think all is going fine, while the communications-oriented coordinators indicate a much broader awareness of difficulties in stimulating teacher use of IT.

A critical question is "Are teachers stimulated to integrate IT into the new curricula?" Even in the early days of the PIT Project, this aspect seems to be developing well. Coordinators indicated that most of the PIT teachers were enthusiastic about the project, and the coordinators thought that the multiplier effect was starting.

As to theme group activities:

- The specialists agreed that the theme-group meetings were being enthusiastically received by the teachers and they are generally positive about the software.
- In at least four of the curriculum areas, the teachers had already begun developing instructional-support materials for various software packages that they had discovered because of the theme groups, and some of these packages were of such a high quality that their broad-scale distribution was being planned.
- The task of steering the theme groups was difficult because of the great variety in computer-experience levels among the teachers in the groups.
- Although much of the software being used in the project (to date, approximately 80 packages) was well received, some of the choices were much less successful. Teachers criticized the tone and style and level of this software.
- The amount of time it takes teachers to learn how to use a package and the additional amount of time it takes to develop strategies for using the package in instruction is a concern; most of the packages available to the teachers are powerful and complex, which also means a long and complex learning curve, beginning with installation problems.

Conclusions

Is a triple innovation a good idea? Although it may seem three times more difficult to expect three innovations to succeed than one, it appears that three concurrent innovations are what is necessary for any one of them to succeed–at least with respect to integration of IT into instructional practice. Despite many years of effort in The Netherlands and throughout the world to stimulate the integration of IT, results so far are disappointing (Pelgrum & Plomp, 1993).

It has been frequently stated that overall school reform should occur for IT utilization to move into a more powerful place in instruction and, at the same time, that IT is a powerful component in expecting any real reform to occur. In The Netherlands, at the same time, three levels of innovation–policy, curriculum, and inservice–are taking place in a coordinated fashion, with a strong infrastructure of support, overall coordination, and funding. It is interesting to see the plan unfold. For more information about the PIT Project, contact Pieter Hogenbirk, Project Manager, PRINT-VO, CPS, Postbox 30, 3870 CA Hoevelaken, The Netherlands. ■

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